VooDu Valve™ On-Line

TUBE DRIVEN PROGRAMMABLE 24-BIT DSP GUITAR PREAMP

USER'S MANUAL

ROCKTRON TUBE SERIES

ROCKTRON CORPORATION

CE

Your VooDu Valve Online has been tested and complies with the following Standards and Directives as set forth by the European Union:

Council Directive(s): 89/336/EEC Electromagnetic Compatibility

Standard(s): EN55022, EN50082-1

This means that this product has been designed to meet stringent guidelines on how much RF energy it can emit, and that it should be immune from other sources of interference when properly used. Improper use of this equipment could result in increased RF emissions, which may or may not interfere with other electronic products.

To insure against this possibility, always use good shielded cables for all audio input and output connections. This will help insure compliance with the Directive(s).

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Contents

1. Introduction

Congratulations on your purchase of the Rocktron *Voodu Valve™ Online*!

The Voodu Valve Online features presets created and uploaded by Rocktron users from all over the world to Rocktron's World Wide Web site. These presets can be easily updated from the "Patch Bay" at Rocktron's web page. In addition, you can also upload your own custom presets to share with other online users. For instructions on downloading and uploading Voodu Valve presets, please visit our web site at "http://www.rocktron.com" and click "Patch Bay".

The Voodu Valve™ Online is a 24 bit DSP professional tube guitar preamp providing 12 unparalleled effect algorithms and superb sound quality never before heard from a digital tube guitar preamp. Complete programmability and full MIDI implementation are coupled with a user friendly operating format to ensure that designing unique and useful preset sounds is as simple as possible.

In addition, the Voodu Valve™ Online also features:

- **Advanced Speaker Simulation** provides a strikingly realistic approximation of a miked speaker cabinet at line-level for direct mixer input or headphone listening.
- **Full parametric Pre and Post EQ** gives the user complete EQ control over each preset.
- **HUSH® Noise Reduction** provides noise reduction while playing and complete silence when not.
- **"Variac" Simulation**, like a conventional Variac, adjusts the level at which the preamp begins to distort. This provides more gain in high-gain applications, and allows for full-bodied cleaner presets which just begin to distort when the strings are attacked harder.
- **Internal Wah-Wah** allows the player to use an expression pedal for Wah-Wah effects instead of running long audio cables out to a conventional Wah-Wah pedal.
- **High-quality Digital Effects**, including:

-Reverb	*-Phasing*	*-Tremolo*	*-Flanging*
-Pitch Shifting	*-Compression*	*-Chorus*	*-Delay*

- **XLR Outputs** for direct mixer input.

This manual will detail the various features and functions of the Voodu Valve Online. After reading it, please keep it for future reference.

OPERATING PRECAUTIONS

NOTE: IT IS VERY IMPORTANT THAT YOU READ THIS SECTION TO PROVIDE YEARS OF TROUBLE FREE USE. THIS UNIT REQUIRES CAREFUL HANDLING.

All warnings on this equipment and in the operating instructions should be adhered to and all operating instructions should be followed.
Do not use this equipment near water. Care should be taken so that objects do not fall and liquids are not spilled into the unit through any openings.
The power cord should be unplugged from the outlet when left unused for a long period of time.

DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT. THIS EQUIPMENT SHOULD BE SERVICED BY QUALIFIED PERSONNEL ONLY. DO NOT MAKE ANY INTERNAL ADJUSTMENTS OR ADDITIONS TO THIS EQUIPMENT AT ANY TIME. DO NOT TAMPER WITH INTERNAL ELECTRONIC COMPONENTS AT ANY TIME. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY VOID THE WARRANTY OF THIS EQUIPMENT, AS WELL AS CAUSING SHOCK HAZARD.

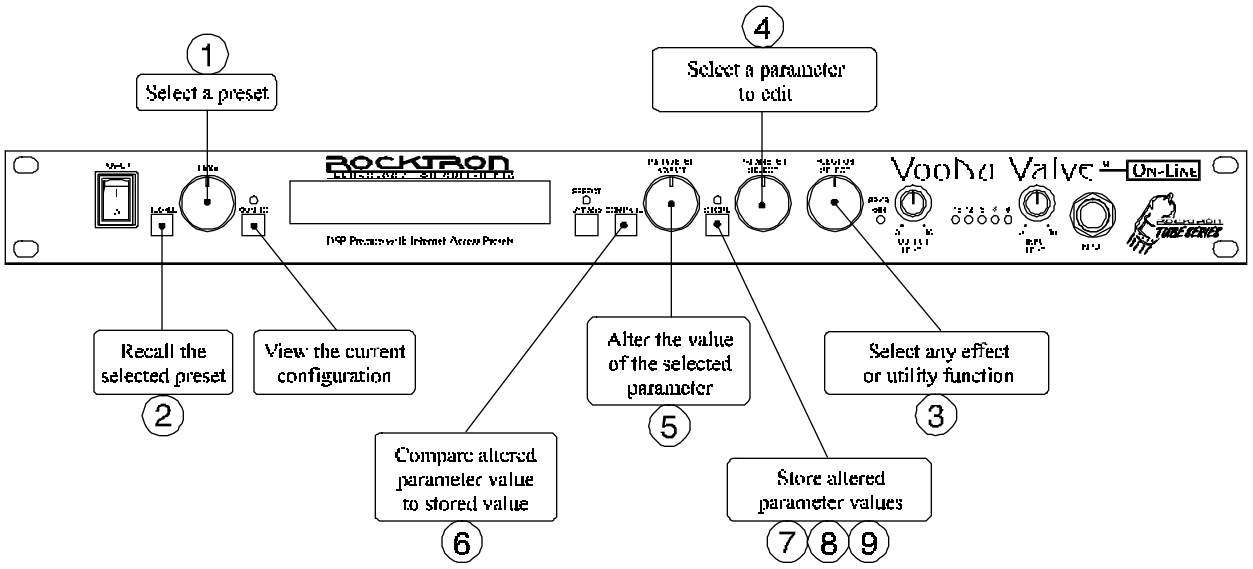
POWER REQUIREMENTS

This unit accepts power from the 9VAC/3.4A adaptor supplied with the unit. This 9 volt RMS AC voltage is internally processed by a voltage doubler which generates a bipolar ±15 volts to maintain the headroom and sound quality of professional, studio quality equipment. Using an external power source such as this minimizes excessive noise and hum problems often associated with internal transformers, providing optimal performance for the user.

OPERATING TEMPERATURE

Do not expose this unit to excessive heat. This unit is designed to operate between 32° F and 104° F (0° C and 40° C). This unit may not function properly under extreme temperatures.

2. Quick Setup



SELECTING A PRESET

STEP 1 Turn the PRESET control to the desired preset.

STEP 2 Press the RECALL button to call up the selected preset.

CHANGING PRESET PARAMETERS

STEP 3 Turn the FUNCTION SELECT control to the desired effect or utility function.

STEP 4 Turn the PARAMETER SELECT control to the parameter you wish to alter under the selected effect or utility function.

STEP 5 Use the PARAMETER ADJUST control to select the new parameter value.

STEP 6 The COMPARE button may be used to compare the sound of the altered value to the stored value.

STORING CHANGED PARAMETERS

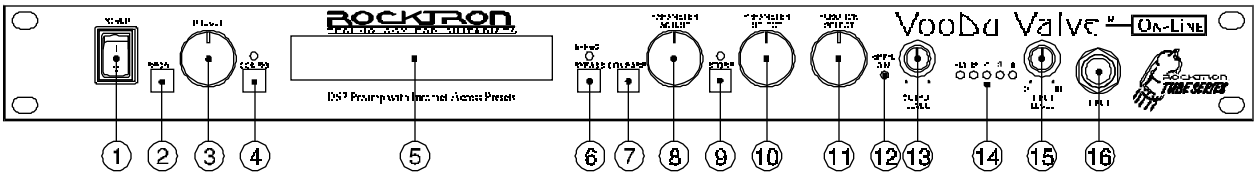
STEP 7 Press the STORE button to start the storing procedure.

STEP 8 If you wish to save the altered preset in the current preset location, press the STORE button a second time.

If you wish to store the altered preset in a different preset location, turn the PRESET control to the desired preset number, then press STORE a second time.

STEP 9 When storing into a different preset location, the Voodu Valve will display "COPY TITLE TOO?". If you wish to copy the title from the previous preset, press STORE a third time. If you do not wish to copy the title, turn any knob to exit the storing procedure.

3. Front Panel



1 **POWER switch**

2 **RECALL button**

This button is used to recall the displayed preset.

3 **PRESET control**

This control scrolls through the successive presets.

4 **CONFIG button/led**

The status of this button determines whether the Voodu Valve™ will display either the preset number and title or the configuration of the currently displayed preset. The configuration display indicates the effects that the displayed preset executes and, in most cases, the order in which they are executed.

The LED above the CONFIG button is lit when the configuration is displayed.

5 **DISPLAY panel**

The DISPLAY panel provides 16 characters consisting of 14 segments each.

6 **EFFECT BYPASS button/led**

When lit, the Pre and Post effects are bypassed and only the Compressor/Preamp signal is passed to the Voodu Valve™ outputs. This button does not affect the condition of the Speaker Simulator.

7 **COMPARE button**

The COMPARE button may be used to compare an altered parameter value to its stored value.

This button may also be used to compare between the altered and stored values of multiple parameters under the same function heading (i.e. "Reverb", "Mixer", etc.).

Note: If comparing an altered value to the stored value and the stored value is currently being viewed, turning a knob or pressing a button that changes the parameter value displayed will cancel the previous altered value. This will also occur if a MIDI control change is received while viewing the stored value(s).

8 **PARAMETER ADJUST control**

This control is used to adjust a displayed parameter value. When the parameter is changed from its original value, the LED above the STORE button will light until either the new value is stored, a new preset is selected or the parameter is returned to its original value.

9 **STORE button/led**

This button is used to store values into the Voodu Valve™ memory when altered. See *"Storing Changed Preset Parameters"* in Chapter 8 for more information on this procedure.

10 **PARAMETER SELECT control**

When adjusting parameter values, this control will scroll through the available parameters under the current function heading.
In the "Title Edit" function, this control will scroll through the character locations to be edited.

11 **FUNCTION SELECT control**

This control allows access to each function of the Voodu Valve™. Depending on what configuration is currently recalled, these functions include:

Global	*Pre EQ (Expert)*	*Phaser*	*Delay*	*Footswitch*
Mixer	*Post EQ (Expert)*	*Flanger*	*Reverb*	*Program Changes*
High Gain	*Compressor*	*Tremolo*	*Config Select*	*MIDI Channels*
Low Gain	*Speaker Simulator*	*Pitch Shift*	*Title Edit*	*MIDI Dump/Load*
HUSH	*Wah-Wah*	*Chorus*	*Controller Assig*	*Factory Restore*

12 **SPEAKER SIMULATOR indicator**

When lit, this LED indicates that the Speaker Simulator is activated for the current preset.

13 **OUTPUT LEVEL control**

This control is used to adjust the output level of the unit at the unbalanced outputs.

14 **INPUT LEVEL meter**

These LEDs provide visual indication of the peak level of the input signal when in the Preset Select mode. For the optimal signal-to-noise ratio, it is best to adjust the input level so that the last LED (0dB) is rarely lit. This will guard against the possibility of overdriving the unit.

These LEDs also display the final digital mixer output levels when any other functions are selected. This will help you to guard against clipping the output of the mixer at the digital-to-analog converter.

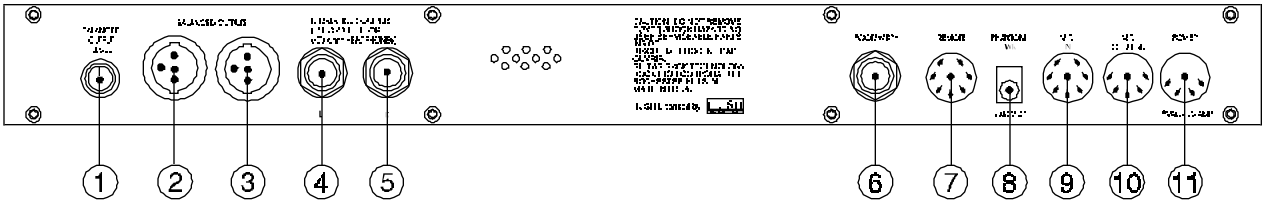
15 **INPUT LEVEL control**

This control adjusts the unit's gain to match the signal level at the input of the Voodu Valve™. Use the INPUT LEVEL meter to determine the setting of this control.

16 **INPUT jack**

This standard, unbalanced mono 1/4" jack is used to provide input to the unit. It is front panel mounted for easy access.

4. Rear Panel



1 **BALANCED OUTPUT LEVEL control**

This control determines the output level at the XLR BALANCED OUTPUTS. Note that the balanced outputs pass the same signals as the unbalanced outputs, except that the levels are independently adjustable.

2 **(L) BALANCED OUTPUT connector**

This balanced XLR connector provides the left balanced output of the Voodu Valve for direct use into a mixing console.

3 **(R) BALANCED OUTPUT connector**

This balanced XLR connector provides the right balanced output of the Voodu Valve for direct use into a mixing console.

4 **(L) UNBALANCED OUTPUT jack**

This 1/4" unbalanced RTS jack provides the left unbalanced output of the Voodu Valve for use with a guitar amplifier or rack system setup.

In addition, this jack also allows for the connection of stereo headphones (600Ω impedance or greater).

5 **(R) UNBALANCED OUTPUT jack**

This 1/4" unbalanced RTS jack provides the right unbalanced output of the Voodu Valve for use with a guitar amplifier or rack system setup.

6 **FOOTSWITCH jack**

This 1/4" mono jack allows for the connection of a momentary footswitch to control the Tapped Delay feature of the Voodu Valve. The Tapped Delay feature allows the player to set (or reset) the current delay time by tapping the footswitch. The new delay time will be based on the length of time between two taps. For more information on this feature, refer to the *"Tap Delay"* section in Chapter 8.

7 **REMOTE jack**

This 7-pin DIN connector is provided for the connection of a Rocktron All Access™ MIDI footswitch, which can be configured to act as a dedicated remote footswitch for the Voodu Valve. This feature allows the user to access Voodu Valve functions and parameters via the remote footswitch.

8 **PHANTOM POWER jack**

This 2.5mm PIN jack offers the ability to power Rocktron MIDI foot controllers from a 7-pin MIDI cable which connects from the Rocktron MIDI foot controller to the MIDI IN jack on the rear panel of the Voodu Valve. This eliminates the need to find an AC outlet near where the footpedal would be placed during a performance, or the need to run an extension cord out to the footswitch. Instead of inserting the AC adaptor into the "POWER" jack of the footswitch as you would normally, plug it into the "PHANTOM POWER" jack on the Voodu Valve. This will power the Rocktron MIDI foot controller through pins 6 and 7 of the MIDI cable connecting the two units. A 7-pin MIDI cable must be used and is available from your Rocktron dealer.

9 **MIDI IN jack**

This 7-pin DIN connector must be connected to the MIDI OUT jack of the transmitting MIDI device via a standard MIDI cable, or to the MIDI THRU jack of the preceding device (if the Voodu Valve is within a chain of MIDI devices).

Pins 6 and 7 of this connector carry the phantom power to power a Rocktron MIDI foot controller when a 7-pin MIDI cable is used.

10 **MIDI THRU/OUT jack**

This standard 5-pin DIN connector can be connected to the MIDI IN jack of another device via a standard MIDI cable. There are limitations to the number of devices that can be chained (or series connected) in this fashion.

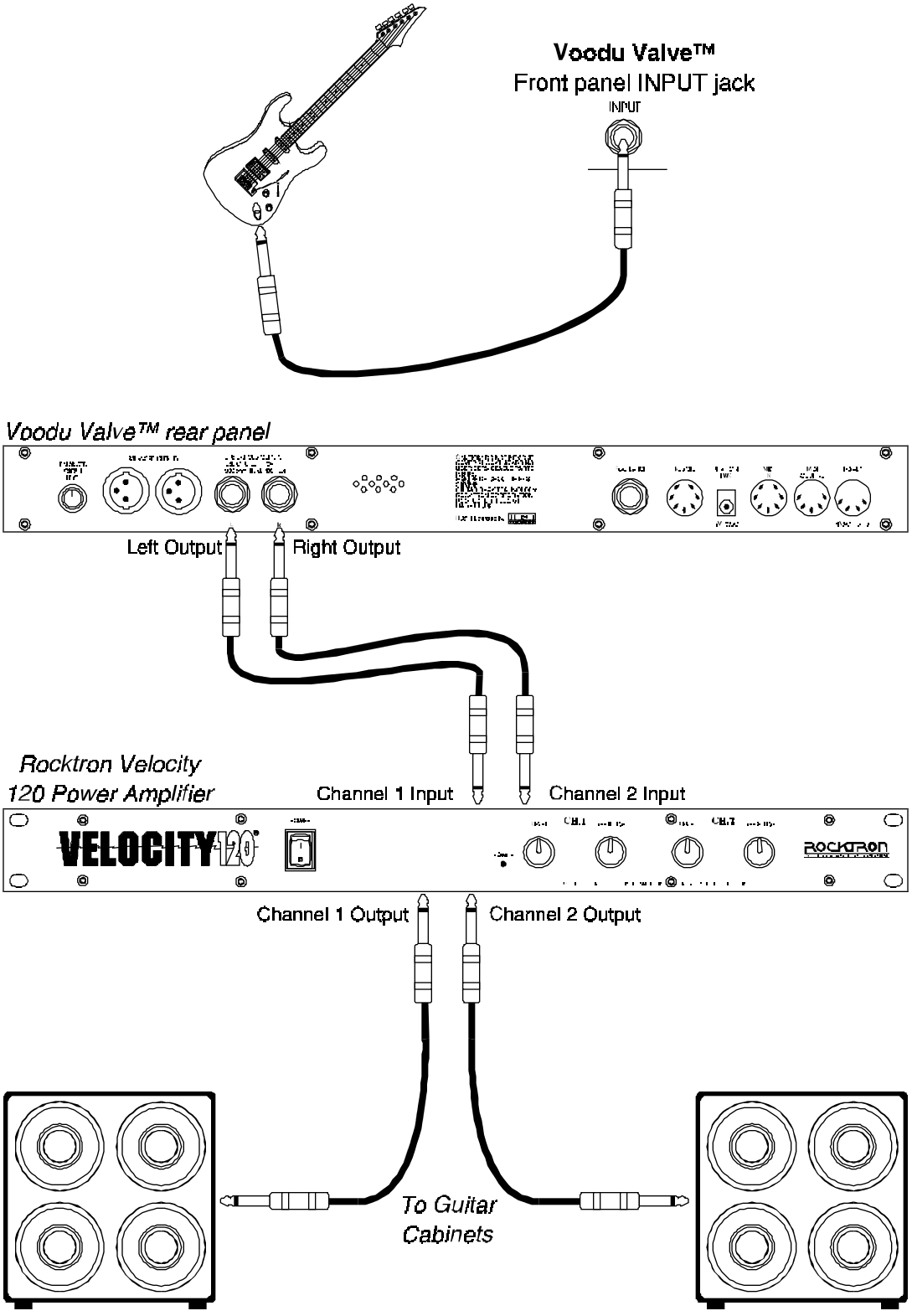
Note: Inherently in MIDI there is a limit to the number of devices which can be chained together (connected in series). With more than 3 devices, a slight distortion of the MIDI signal can occur (due to signal degradation) which can cause an error in MIDI signal transmission. Should this problem arise, a MIDI Thru box can be used which connects directly to the MIDI device which transmits MIDI information and has multiple connectors for the multiple devices receiving MIDI. MIDI cables should not exceed 50 feet (15 meters) in length.

11 **POWER jack**

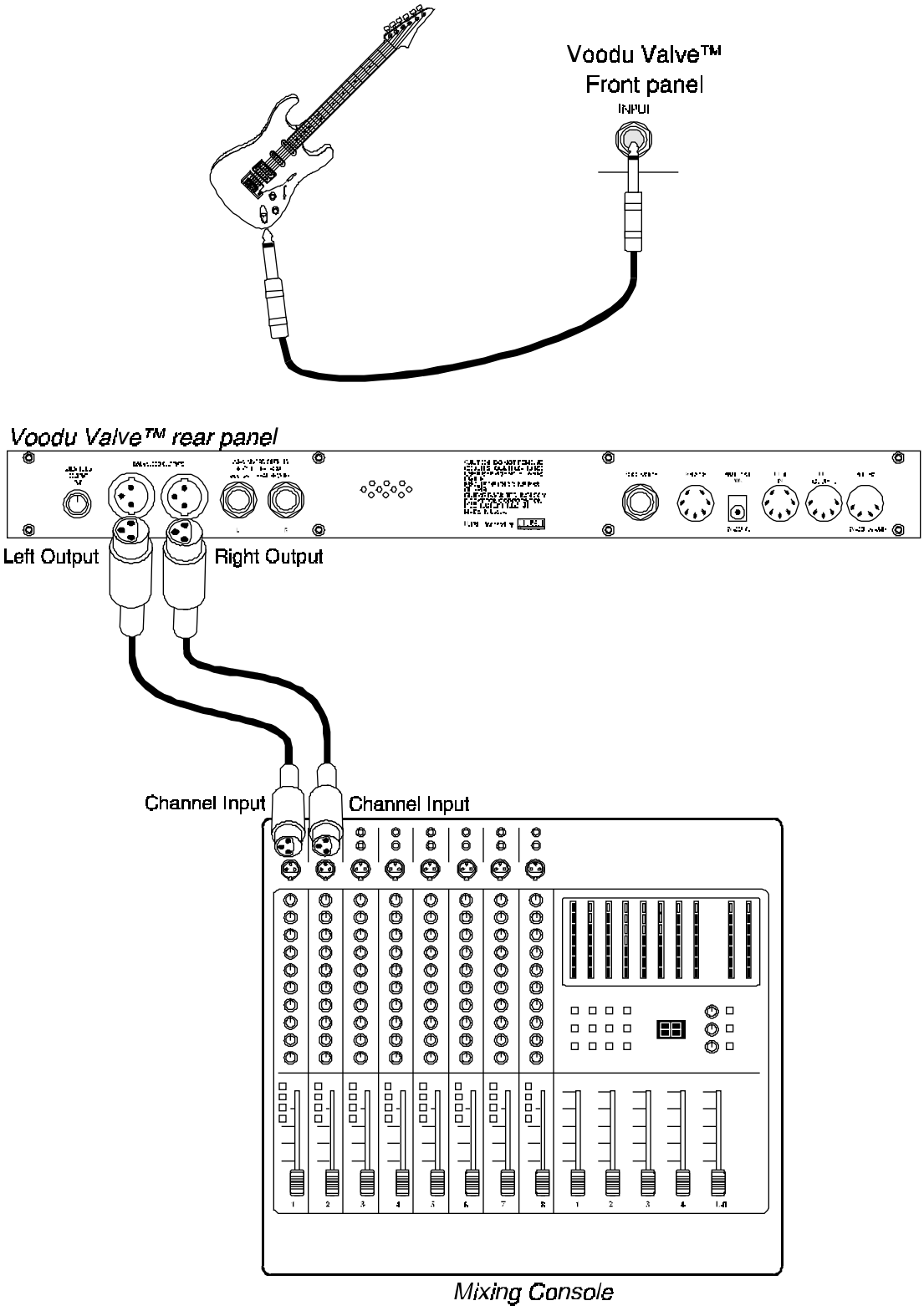
This 4-pin DIN connector accepts power from the 9VAC adaptor supplied with the unit.

5. Connections

Using the Voodu Valve™ with a stereo power amp and guitar cabinets



Using the Voodu Valve™ direct into a mixing console



6. Operating Format

The Voodu Valve provides 254 stored sounds called ***presets.*** Any of the 254 presets can be called up at any time via the front panel PRESET control (used to select a preset) and RECALL button (used to call up the selected preset), or by a remote MIDI footswitch.

The root of each preset's sound is its ***configuration.*** The configuration determines both the effects available for a given preset and the order in which those effects are executed. The Voodu Valve provides 12 fixed configurations to achieve a wide array of preset sounds, any of which may be instantly called up at any time.

Voodu Valve™ Configurations:

- **High-gain Distortion - Chorus - Delay - Reverb**
- **High-gain Distortion - Flange - Delay - Reverb**
- **High-gain Distortion - Tremolo - Delay - Reverb**
- **High-gain Distortion - Pitch Shift - Delay - Reverb**
- **Wah - High-gain Distortion - Delay - Reverb**
- **Phase Shift - High-gain Distortion - Delay - Reverb**
- **Low-gain Distortion - Chorus - Delay - Reverb**
- **Low-gain Distortion - Flange - Delay - Reverb**
- **Low-gain Distortion - Tremolo - Delay - Reverb**
- **Low-gain Distortion - Pitch Shift - Delay - Reverb**
- **Wah - Low-gain Distortion - Chorus - Delay - Reverb**
- **Phase Shift - Low-gain Distortion - Delay - Reverb**

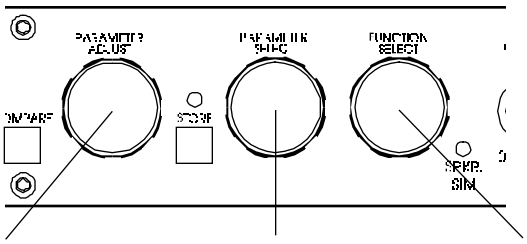
To see the configuration of each preset, press the CONFIG button on the front panel of the Voodu Valve—the LED above the CONFIG button will light and the display will show the configuration for the current preset. Turning the PRESET control will then scroll through each successive preset (displaying its configuration instead of its preset number and title).

The configuration of each preset can also be changed from within the desired preset. For more information on selecting a configuration, see "Selecting a Configuration" in Section 8, *"Operating the Voodu Valve"*.

Voodu Valve Functions and Parameter Descriptions

Each Voodu Valve preset is divided up into individual blocks called ***functions*** (such as "Mixer", "Reverb", etc.). Within each function of each configuration is a set of controls which allow you to manipulate various aspects of that function. These controls are called ***parameters.*** It is the setting of each of the parameters which determines the overall sound of each preset.

The Voodu Valve is set up to allow you to first access each function (via the FUNCTION SELECT control), then the parameter list for each function (via the PARAMETER SELECT control) and finally the adjustable value for each parameter (via the PARAMETER ADJUST control).



Step 3: *Turn to alter the value of the selected parameter.*

Step 2: *Turn to select a parameter within the selected function.*

Step 1: *Turn to select a function.*

The functions available for each preset are dependent upon which configuration is currently recalled. The remainder of this section will describe each of the effect-based functions and the associated adjustable parameters they provide.

The remaining functions are utility-based, and are described in Section 8, *"Operating the Voodu Valve".*

GLOBAL Function

The first function displayed after turning the FUNCTION SELECT control is the Global function. The parameters provided in this function affect all presets (i.e. the settings stored for these parameters are the same for all presets).

The PARAMETER SELECT control will allow you to access these Global parameters:

OUTPUT The OUTPUT parameter determines whether the output of the Voodu Valve is a stereo (left and right) signal or two mono signals.

SPKR SIM This SPEAKER SIMULATOR parameter under the Global function allows you to globally (all presets) lock the Speaker Simulator off (LOCKOFF) so that it will always be off for all presets - regardless of the status of the "SPKR SIM" parameter under the Speaker Simulator function. It may also be locked on for the left channel (LOCK L) or on for both channels (LOCK B).

Note: The Voodu Valve will only recognize the "SPKR SIM" parameter under the Speaker Simulator function when this parameter is stored as UNLOCK.

HUSH OFFSET The HUSH OFFSET parameter allows you to globally (all presets) adjust the HUSH® Expander Threshold. This means that if this parameter is altered from 0dB to +3dB, the Expander Threshold will be 3dB higher for all presets. This feature can be useful when switching from a quiet guitar with passive electronics to a noisy guitar with active electronics - as the active guitar would require a higher Threshold level in all presets.

MUTE The MUTE parameter allows you to mute the output of the Voodu Valve. This feature is especially useful when changing guitars during a live set. If a Rocktron All Access™ is used in remote mode with the Voodu Valve, a single All Access button can be configured as a momentary switch which will mute the output when it is held down. (See "Using a Voodu Valve with a Rocktron All Access in REMOTE mode" in Chapter 8 for more information.)

MIXER Function

The next function displayed after turning the FUNCTION SELECT control is the Mixer function. The Mixer function parameters are included in all presets—regardless of which configuration is currently recalled—although the parameter values stored in this function are only for the currently recalled preset.

This digital mixer allows you to control most signal levels pertaining to each preset's configuration and stores these levels for each preset.

The PARAMETER SELECT control will allow you to access these Mixer parameters:

VOLUME	The VOLUME parameter determines the overall signal level of the current preset.
LEFT OUT LVL	The LEFT OUT LEVEL parameter allows you alter the level of the left channel output of the current preset independent of the right channel.
RIGHT OUT LVL	The RIGHT OUT LEVEL parameter allows you alter the level of the right channel output of the current preset independent of the left channel.
MIX DIR/EFF	The DIR/EFF MIX parameter is used to define the ratio of direct signal level to effect (Chorus, Flange, Pitch Shift) signal level.
DIR PAN	The DIRECT PAN parameter allows you to pan the direct signal to the left or right.
DELAY LVL	The DELAY LEVEL parameter determines the overall level of the delayed signal at the output relative to the direct signal and other effect signals. This parameter can also be accessed from the Delay function parameter list.
REVERB LVL	The REVERB LEVEL parameter determines the level of the reverb signal at the output relative to the direct signal and other effect signals. This parameter can also be accessed from the Reverb function parameter list.

HIGH GAIN Function

The HIGH GAIN function is only accessible in configurations which display "H-GAIN" in the configuration title. The preamp stage in these configurations is set up to provide high gain levels for maximum sustain and distortion.

The PARAMETER SELECT control will allow you to access these High Gain parameters:

TUBE GAIN The TUBE GAIN parameter sets the amount of drive at the input of the tube stage.

GAIN The GAIN parameter determines the gain value in the distortion stage.

VARIAC ADJUST The VARIAC ADJUST parameter adjusts the level at which the preamp stage in the Voodu Valve begins to distort. A Variac is a voltage-attenuating device that plugs into an AC wall outlet and adjusts the voltage level to any device which is plugged into it. For years, many guitarists have plugged their amplifier heads into a Variac and reduced the voltage coming into the amplifier from the AC wall outlet. This allows the amplifier tubes to reach saturation at a lower input level and increases the gain produced. The VARIAC ADJUST parameter operates in a similar manner as a conventional Variac - where lowering the parameter value lowers the level at which saturation will take place.

BASS LVL The post BASS LEVEL parameter adjusts the amount of low frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

MID LVL The post MID LEVEL parameter adjusts the amount of mid frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

TREBLE LVL The post TREBLE LEVEL parameter adjusts the amount of high frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

PRESENCE LVL The post PRESENCE LEVEL parameter also adjusts the amount of high frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

LOW GAIN Function

The LOW GAIN function is only accessible in configurations which display "L-GAIN" in the configuration title. The preamp stage in these configurations provides four distortion types, and can also be used for clean tones.

The PARAMETER SELECT control will allow you to access these Low Gain parameters:

TUBE GAIN The TUBE GAIN parameter sets the amount of drive at the input of the tube stage.

GAIN The GAIN parameter determines the gain value in the distortion stage.

TUBE The TUBE parameter allows you to select between four different tube distortion types - Hard Clip, Soft Clip, Class A, Class B. The Hard Clip setting provides the hardest clipping, while the Soft Clip type provides a softer clipping and the Class A and B types provide the softest clipping. The Class A setting produces non-symmetrical clipping - therefore more even harmonics are produced. Conversely, the Class B setting produces symmetrical clipping. The differences between these types are most pronounced at moderate gain settings of about 30dB or less, where Class B produces the least amount of upper harmonics.

BASS LVL The post BASS LEVEL parameter adjusts the amount of low frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

MID LVL The post MID LEVEL parameter adjusts the amount of mid frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

TREBLE LVL The post TREBLE LEVEL parameter adjusts the amount of high frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

PRESENCE LVL The POST PRESENCE LEVEL parameter also adjusts the amount of high frequency information at the output of each preset. This parameter is also accessible from the "Post EQ (Expert)" function. *(In the Post EQ function, the center frequency and bandwidth of this EQ section are also adjustable.)*

HUSH® Function

The HUSH® function is accessible in all presets—regardless of the configuration currently recalled.

HUSH is Hush Systems' patented single-ended noise reduction system. The HUSH system contained in the Voodu Valve, though modeled after the latest analog HUSH design, is a fully digital implementation achieved through Digital Signal Processing (DSP).

The low level expander of the HUSH system operates like an electronic volume control. The analog version of the HUSH utilizes a voltage-controlled amplifier (VCA) circuit which can control the gain between the input and the output from unity to 30, 40 or even 50dB of gain reduction. When the input signal is above the user preset threshold point, the VCA circuit remains at unity gain. (This means that the amplitude of the output signal will be equal to that of the input signal.) As the input signal level drops below the user preset threshold point, downward expansion begins. At this point the expander acts like an electronic volume control and gradually begins to decrease the output signal level relative to the input signal level. As the input signal drops further below the threshold point, downward expansion increases. A drop in the input level by 20dB would cause the output level to drop approximately 40dB (i.e., 20dB of gain reduction). In the absence of any input signal, the expander will reduce the gain so that the noise floor becomes inaudible.

The HUSH circuit is located after the A/D converter in the signal chain to reduce any noise generated from the guitar and the A/D converter. This ensures a quiet input signal to the preamp section. Because the preamp section of the Voodu Valve™ is digital, it is virtually noise-free (even in the high-gain mode). Therefore, a quiet input signal to the preamp will result in a quiet output signal.

The PARAMETER SELECT control will allow you to access these Hush® parameters:

HUSH I/O	The HUSH I/O parameter simply determines whether the HUSH® circuit is active for the current preset.
HUSH THRESH	The HUSH THRESHOLD parameter determines the level at which downward expansion begins. For example, if the HUSH THRESHOLD was set at -20dB and the input signal dropped below -20dB, downward expansion would begin.

PRE EQ (EXPERT) Function

The PRE EQ (EXPERT) function is available in all presets—regardless of which configuration is currently recalled.

This function allows you to shape the tone prior to the distortion stage. Considerable tone variations can be achieved by modifying these pre-distort EQ parameters.

The PARAMETER SELECTcontrol will allow you to access these PRE EQ parameters:

LF LEVEL	The pre-LF (low frequency) LEVEL parameter allows you to cut or boost the low frequencies from -15dB to +6dB prior to the distortion stage. This EQ section is a shelving-type.
LF FREQ	The pre-LF (low frequency) FREQUENCY parameter allows you to select a frequency band with an upper frequency between 63Hz and 500Hz to be cut or boosted by the pre-LF LEVEL parameter.
MID LEVEL	The pre-MID LEVEL parameter allows you to cut or boost the mid-band frequencies from -15dB to +12dB prior to the distortion stage.
MID FREQ	The pre-MID FREQUENCY parameter allows you to select a mid-band center frequency between 500Hz and 4KHz to be cut or boosted via the pre-MID LEVEL parameter.
MID BW	The pre-MID BANDWIDTH parameter determines how wide or narrow the bandwith of the selected mid-band frequency is (in octaves). A small bandwidth only boosts or cuts frequencies close to the center frequency, while a large bandwidth affects the level of frequencies up to two octaves from the center frequency.

POST EQ (EXPERT) Function

The POST EQ (EXPERT) function is available in all presets—regardless of which configuration is currently recalled.

This function allows you shape the tone after it has passed through the distortion stage. These post-distortion EQ parameters have a more dramatic effect on the overall tone than the pre-distortion parameters.

The PARAMETER SELECT control will allow you to access these POST EQ parameters:

BASS LVL	The post-BASS LEVEL parameter allows you to cut or boost the low frequencies by 15dB after the distortion stage.
BASS FREQ	The post-BASS FREQUENCY parameter allows you to select a center frequency between 63Hz and 500Hz to be cut or boosted by the post-BASS LEVEL parameter.
BASS BW	The post-BASS BANDWIDTH parameter determines (in octaves) the width of the selected bass band.
MID LVL	The post-MID LEVEL parameter allows you to cut or boost the mid-band frequencies by 15dB after the distortion stage.
MID FREQ	The post-MID FREQUENCY parameter allows you to select a mid-band center frequency between 250Hz and 2KHz to be cut or boosted via the post-MID LEVEL parameter.
MID BW	The post-MID BANDWIDTH parameter determines (in octaves) the width of the selected mid band.
TREBLE LVL	The post-TREBLE LEVEL parameter allows you to cut or boost the high-band frequencies by 15dB after the distortion stage.
TREBL FRQ	The post-TREBLE FREQUENCY parameter allows you to select a high-band center frequency between 1KHz and 8KHz to be cut or boosted via the post-TREBLE LEVEL parameter.
TREBLE BW	The post-TREBLE BANDWIDTH parameter determines (in octaves) the width of the selected high band.
PRESENCE LVL	The post-PRESENCE LEVEL parameter allows you to cut or boost another high-band frequency by 15dB after the distortion stage.
PRES FREQ	The post-PRESENCE FREQUENCY parameter allows you to select a high-band center frequency between 2KHz and 8KHz to be cut or boosted via the post-PRESENCE LEVEL parameter.
PRES BW	The post-PRESENCE BANDWIDTH parameter determines (in octaves) the width of the selected high band.

COMPRESSOR Function

The COMPRESSOR function is available only in configurations which display "L-GAIN" in the configuration title.

This function allows you to compress the signal prior to the distortion stage. Compression is often used to maintain an even level when using clean tones, and also to increase sustain when using distorted tones.

The PARAMETER SELECT control will allow you to access these COMPRESSOR parameters:

COMPRESSOR I/O	The COMPRESSOR IN/OUT parameter determines whether the compressor is active for the current preset.
COMP THRESH	The COMPRESSOR THRESHOLD parameter determines the input level (in dB) at which compression will begin. Lower settings of this parameter will result in more compression.
COMP ATTACK	The COMPRESSOR ATTACK parameter determines the speed (in milliseconds) in which the compressor will reach its maximum compression level after the input signal has exceeded the threshold level (set by the COMPRESSOR THRESHOLD parameter).
COMP RELEASE	The COMPRESSOR RELEASE parameter determines the speed in which compression will cease after the input signal has dropped below the threshold level.

SPEAKER SIMULATOR Function

The SPEAKER SIMULATOR function is included in all presets and provides a realistic approximation of a miked speaker cabinet for applications involving connecting the Voodu Valve directly to a mixing board, recording system or other full range system.

When a preset is recalled which has the Speaker Simulator on for either the left channel or both channels, the front panel SPKR SIM LED will light.

Note: The parameters provided in this function are operational only when the SPKR SIM parameter under the Global function is stored UNLOCK, LOCK L or LOCK B.

The PARAMETER SELECT control will allow you to access these SPEAKER SIMULATOR parameters:

SPKR SIM I/O	The SPEAKER SIMULATOR parameter allows you to select whether the Speaker Simulator is on for BOTH outputs, on for only the LEFT output or OFF.
SPKR TYPE	The SPEAKER TYPE parameter determines the type of speaker to be simulated. 15",12",10", 8" and full range speakers are available.
MIC PLACEMENT	The MIC PLACEMENT parameter simulates a microphone placed anywhere from the center of the speaker cone out to the edge of the cone. Positive parameter values simulate moving the microphone toward the center of the speaker, while negative values move it to the edge.
REACTANCE	The REACTANCE parameter simulates the characteristics of the the interaction between a tube amplifier and a guitar speaker cabinet. The higher the parameter value selected, the more these characteristics will be apparent. Negative values of reactance can be used to simulate an open-back cabinet.

WAH-WAH Function

The WAH-WAH function is available only in configurations which display "WAH" in the configuration title.

The Voodu Valve has an internal wah-wah which allows for an expression pedal to be used as a wah-wah pedal through continous control changes. Use of this feature eliminates the need to run long audio cables out to a conventional wah-wah pedal.

To use an expression pedal as a wah-wah pedal, connect it to a MIDI controller (such as a Rocktron MIDI Mate™) and set the controller's MIDI channel to correspond with the Voodu Valve's receiving MIDI channel. Then set the pedal's control number on the MIDI Mate™ to match the Wah Frequency parameter's control number on the Voodu Valve. This control number is set on the Voodu Valve in the "CONTROLLER ASSIG" function. *(See "Controller Assignments" in Chapter 8 for more information on assigning control numbers.)*

The PARAMETER SELECT control will allow you to access these WAH-WAH parameters:

WAH-WAH I/O	The WAH-WAH I/O parameter determines whether the wah-wah is active for the current preset.
WAH FREQ	The WAH FREQUENCY parameter allows you to manually sweep the frequency range of the wah-wah via the PARAMETER ADJUST control. Selecting a frequency for this parameter and storing the WAH-WAH parameter IN allows you to use the wah-wah as a fixed wah.

PHASER Function

The PHASER function is available only in configurations displaying "PHAS" in the configuration title.

Phase shifting involves splitting the input signal into two signals, then shifting the phase of different frequencies of one signal and mixing it back with the original signal.

The PARAMETER SELECT control will allow you to access these PHASER parameters:

PHASER I/O	The PHASER I/O parameter determines whether the Phaser is active for the current preset.
DEPTH	The DEPTH parameter determines the modulation depth of the phase shift effect. Higher parameter settings result in the sweep of the filtering effect occurring over a wider frequency range.
RATE	The RATE parameter deterrnines the speed at which the phase shifted signal is modulated.
RESONANCE	The RESONANCE parameter adds feedback to the Phaser so that it has a more pronounced effect.
STAGES	The STAGES parameter determines how many stages of phase shift are to be active. A parameter setting of "4" produces a result similar to a vintage Phase 90, while a setting of "6" emulates other phaser pedals.

FLANGER Function

The FLANGER function is available only in configurations displaying "FLAN" in the configuration title.

Flanging involves splitting the input signal into at least two individual delayed signals *(Voice 1 and Voice 2)*, then modulating these delayed signals so that, when summed back with the direct signal, phase cancellations will occur at some frequencies while peaks in the response will occur at others.

The PARAMETER SELECT control will allow you to access these FLANGER parameters:

FLANGER I/O The FLANGER I/O parameter determines whether the Flanger is active or bypassed for the current preset.

LEVEL 1 The LEVEL 1 parameter determines the volume of Voice 1 relative to Voice 2.

Tip: *Keep the settings of these levels high and use the DIR/EFF mix parameter in the Mixer function to control the overall amount of flanged signal.*

PAN 1 The PAN 1 parameter allows you to pan Voice 1 to the left or right channel.

DEPTH 1 The DEPTH 1 parameter adjusts the amount of modulation of Voice 1. Lower DEPTH settings produce more subtle effects, while higher settings will result in a more drastic effect.

RATE 1 The RATE 1 parameter determines the speed at which Voice 1 is modulated.

LEVEL 2 The LEVEL 2 parameter determines the volume of Voice 2 relative to Voice 1.

PAN 2 The PAN 2 parameter allows you to pan Voice 2 to the left or right channel.

DEPTH 2 The DEPTH 2 parameter adjusts the amount of modulation of Voice 2. Lower DEPTH settings produce more subtle effects, while higher settings will result in a more drastic effect.

RATE 2 The RATE 2 parameter determines the speed at which Voice 2 is modulated.

REGEN The REGENERATION parameter determines how much of the the delayed output signal is fed back into the input. More regeneration produces a more pronounced "jet airplane" type of effect.

TREMOLO Function

The TREMOLO function is available only in configurations displaying “TREM” in the configuration title.

The Tremolo effect continuously varies the volume of the signal.

The PARAMETER SELECT control will allow you to access these TREMOLO parameters:

TREMOLO	The TREMOLO I/O parameter determines whether the Tremolo is active or bypassed for the current preset.
LOCATION	The LOCATION parameter determines whether the Tremolo is located Pre-Reverb or Post-Reverb. Most vintage amplifiers configured the Tremolo (or vibrato) Post-Reverb.
DEPTH	The DEPTH parameter determines the amount of modulation for the Tremolo signal. Lower DEPTH settings produce more subtle tremolo effects, while higher settings will result in a more extreme tremolo effect.
RATE	The RATE parameter determines the speed at which the tremolo signal modulates (or increases and decreases in volume).
SHAPE	The SHAPE parameter determines the waveshape of the tremolo signal. Selecting a different waveshape produces a different tremolo effect.

PITCH SHIFT Function

The PITCH function is available only in configurations displaying “PSHF” in the configuration title.

Pitch Shifting is used to change the pitch of the input signal to produce a harmony note based on the input signal. The harmony voice may be of any fixed interval—up to one octave above the input signal to two octaves below—and is selected in 20-cent increments. Fine adjustment can be made in one cent (1/100th semitone) increments.

The PARAMETER SELECT control will allow you to access these PITCH SHIFT parameters:

PITCH SHIFT I/O	The PITCH SHIFT I/O parameter determines whether the Pitch Shifter is active or bypassed for the current preset.
LEVEL	The LEVEL parameter determines the volume of the pitch shifted signal. The DIR/EFF MIX parameter in the Mixer function also affects this volume.
PAN	The PAN parameter allows you to pan the shifted signal to the left or right channel.
PITCH	The PITCH parameter selects what harmony note the Voodu Valve™ will produce based on the input note. The value displayed for this parameter represents the number of *cents* that the signal will be shifted (adjustable in 20-cent increments). Each 100 cents (or five 20-cent steps) above or below "0" represents the number of half-steps the shifted signal will be from the input signal. This parameter is adjustable from "-2400" to "+1200", where "-2400" = two octaves below the input signal, "0" = unison and "+1200" = one octave above the input signal. Refer to the table on the following page to determine the cent value for each fixed interval.
FINE	The FINE parameter allows for adjustment in l-cent steps for fine adjustment of the harmony note.
SPEED	The SPEED parameter determines the amount of time delay used in the shifting process. SLOW results in the longest delay and the highest quality shifted signal (especially at larger amounts of pitch shift). FAST results in the least delay, but the lowest quality shifted signal. This setting should only be used for slight amounts of pitch shift.

PITCH SHIFT INTERVALS

PARAMETER VALUE	CORRESPONDING INTERVAL
+1200	one octave
+1100	Major 7th
+1000	minor 7th
+900	Major 6th
+800	minor 6th
+700	perfect 5th
+600	diminished 5th
+500	perfect 4th
+400	Major 3rd
+300	minor 3rd
+200	Major 2nd
+100	minor 2nd
0	Unison
-100	Major 7th
-200	minor 7th
-300	Major 6th
-400	minor 6th
-500	perfect 5th
-600	diminished 5th
-700	perfect 4th
-800	Major 3rd
-900	minor 3rd
-1000	Major 2nd
-1100	minor 2nd
-1200	1 Octave
-1300	One octave plus a Major 7th
-1400	One octave plus a minor 7th
-1500	One octave plus a Major 6th
-1600	One octave plus a minor 6th
-1700	One octave plus a perfect 5th
-1800	One octave plus a diminished 5th
-1900	One octave plus a perfect 4th
-2000	One octave plus a Major 3rd
-2100	One octave plus a minor 3rd
-2200	One octave plus a Major 2nd
-2300	One octave plus a minor 2nd
-2400	2 Octaves

Voices above the input signal

Equal to the input signal

Voices below the input signal

NOTE: *There are 5 steps of the parameter adjust control between each of the intervals shown above (each step equals 20 cents).This allows for smooth pitch change when an expression controller (such as a volume pedal used with a Rocktron All Access™ or MIDI Mate™ foot controller) is assigned to the PITCH parameter to change the pitch by remote means.*

CHORUS Function

The CHORUS function is available only in configurations displaying “CRS” in the configuration title.

The Chorus effect in the Voodu Valvedddd is produced by using two delayed signals (Voice 1 and Voice 2), detuning these delayed signals (slightly changing their pitch), then modulating the detune effect so that the amount of pitch detune is constantly varying. Using different detune amounts, modulation rates, modulation depths and pan settings for each delayed signal will produce a greater perceived spaciousness.

The PARAMETER SELECT control will allow you to access these CHORUS parameters:

CHORUS I/O	The CHORUS I/O parameter determines whether the Chorus is active or bypassed for the current preset.
LEVEL 1	The LEVEL 1 parameter determines the volume of Voice 1 in relation to Voice 2. The DIR/EFF MIX parameter in the Mixer function also determines the Chorus level.
PAN 1	The PAN 1 parameter allows you to pan Voice 1 to the left or right channel.
DEPTH 1	The DEPTH 1 parameter adjusts the amount of modulation of the Voice 1 signal. A lower depth setting will produce a more subtle detune effect, while a higher setting will produce a more extreme detuning of Voice 1.
RATE 1	The RATE 1 parameter determines the sweep speed (or the speed at which Voice 1 is modulated). Lower parameter settings will result in slower speeds, while higher settings will result in faster speeds.
DELAY 1	The DELAY 1 parameter allows you to select the minimum delay time (in milliseconds) for Voice 1. This delayed signal (along with Voice 2) is detuned and modulated to produce the chorus effect. Using shorter delay times will result in a tighter sounding chorused signal, while longer delay times will produce a larger ambient effect.
LEVEL 2	The LEVEL 2 parameter determines the volume of Voice 2 in relation to Voice 1.

PAN 2	The PAN 2 parameter allows you to pan Voice 2 to the left or right channel.
DEPTH 2	The DEPTH 2 parameter adjusts the amount of modulation of the Voice 2 signal. A lower depth setting will produce a more subtle detune effect, while a higher setting will produce a more extreme detuning of Voice 2.
RATE 2	The RATE 2 parameter determines the sweep speed (or the speed at which Voice 2 is modulated). Lower parameter settings will result in slower speeds, while higher settings will result in faster speeds.
DELAY 2	The DELAY 2 parameter allows you to select the minimum delay time (in milliseconds) for Voice 2. It is this delayed signal (along with Voice 1) that is detuned and modulated to produce the chorus effect. Using shorter delay times will result in a tighter sounding chorused signal, while longer delay times will produce a larger ambient effect.

DELAY Function

The DELAY function is available in all presets.

Delay is a reproduction of the input signal, occurring at a prescribed time (usually expressed in milliseconds) following the input signal. The Voodu Valve™ provides two discrete delays (Delay 1 and Delay 2), each of which has its own parameters to determine its particular characteristics.

The PARAMETER SELECT control will allow you to access these DELAY parameters:

DELAY The DELAY parameter determines whether the Delay is active or muted for the current preset.

MUTE TYPE The MUTE TYPE parameter allows for muting the delay at its input (PRE), its output (POST) or BOTH.

Muting the input (PRE) of the delay will not allow any signal to enter the delay section until the delay is switched in. When using a moderate amount of regeneration, switching out the delay with the input muted will allow you to generate a non-delayed signal which will play over the decaying regenerated signal which continues on after the delay is switched out.

Muting the output (POST) of the delay will result in the delayed signal being immediately turned off when the delay is switched out. This means that delays and regeneration will not continue when the delay is switched out. If the output were not muted, signals that were input before the delay was switched out would be allowed to regenerate, even after switching out the delay.

It is also possible to mute both the input and the output (BOTH) so that no signal enters or exits the Delay section when it is not switched in.

DELAY LVL The DELAY LEVEL parameter determines the overall level of the delayed signal at the output relative to the direct signal and other effect signals. This parameter can also be accessed from the Delay function parameter list.

MIX The MIX parameter is used to define the ratio of Source 1 signal to Source 2 signal to be input to the Delay section. Source 1 is the Voice 1 output from the previous effect in the signal chain (chorus, flanger, pitch shifter, etc.), while Source 2 may be the Voice 2 output from the previous effect in the signal chain or the direct signal (selectable via the SOURCE 2 parameter).

In configurations where there is no effect immediately preceding the delay, Source 1 and Source 2 will be the preamp output (direct) signal.

SOURCE 2	The SOURCE 2 parameter is used to select whether the Source 2 input will be the VOICE 2 output from the previous effect in the signal chain or the direct signal (DIR).
DLY HF DAMP	The DELAY HIGH FREQUENCY DAMPING parameter controls the amount of high frequency content in the delayed and regenerated signals. Higher amounts of damping will result in less high frequency information in the delayed signal.
OUT LEVEL 1	The OUTPUT LEVEL 1 parameter determines the volume of Delay 1 in relation to Delay 2.
PAN 1	The PAN 1 parameter allows you to pan the Delay 1 signal to the left or right channel.
DLY TIME 1	The DELAY TIME 1 parameter determines the length of time (in milliseconds) after the input signal that the Delay 1 signal will begin. The DELAY TIME can be adjusted via the ADJUST control, MIDI controller changes or via the Tap Delay feature *(see "Operating the Voodu Valve" for detailed descriptions of each).*

REVERB Function

The REVERB function is available in all presets.

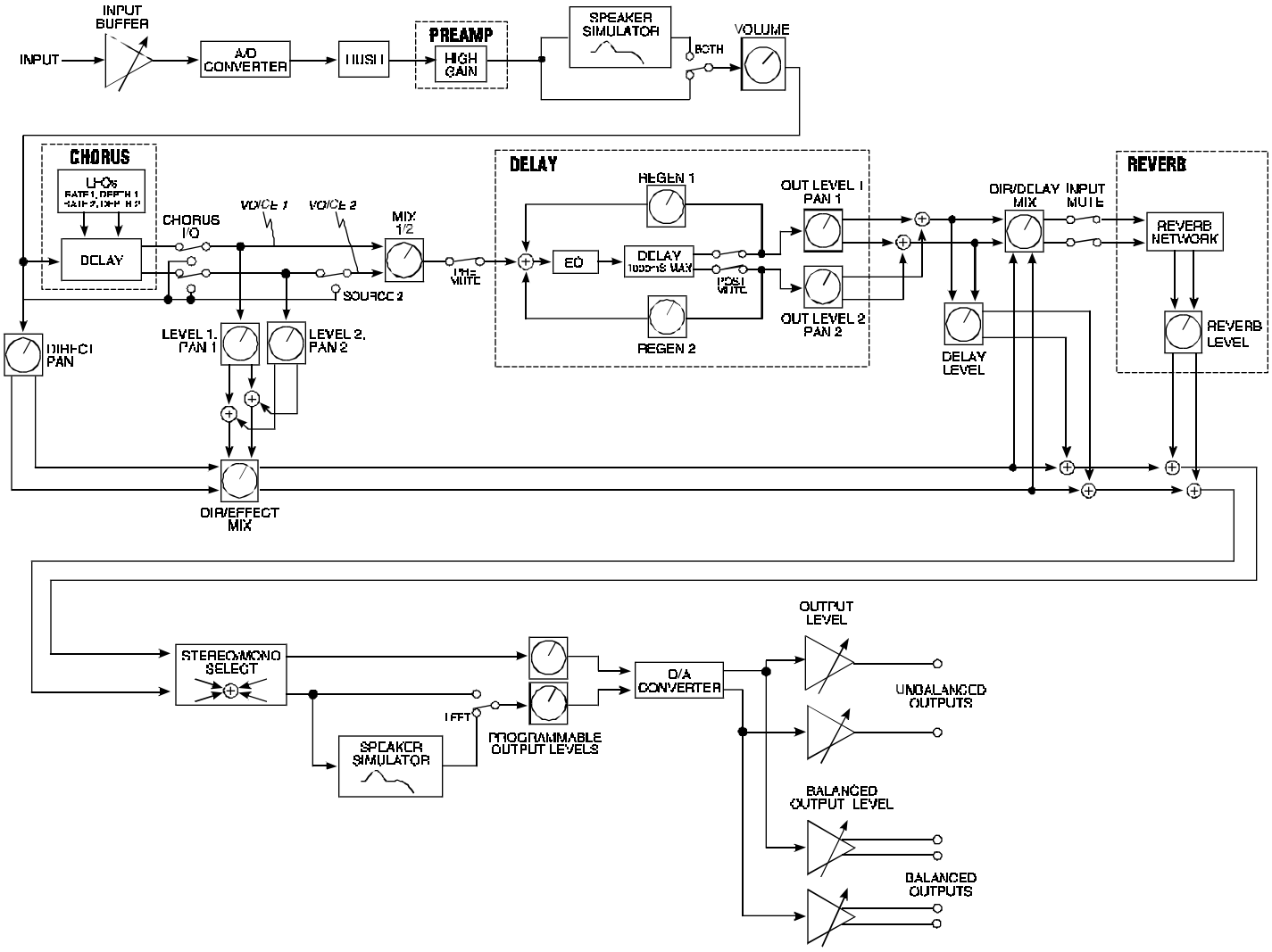
Reverb is a multitude of echos spaced so close together that, to the human ear, seem as a single continuous sound. These echos gradually decrease in intensity until they are ultimately absorbed by the boundaries and obstacles within a room. As the sound waves from the sound source strike the boundaries of a room, a portion of the energy is reflected away from the obstacle while another portion is absorbed into it—thereby causing both the continuance of sound as well as the decaying or "dying out" of the sound.

The PARAMETER SELECT control will allow you to access these REVERB parameters:

REV INPUT	The REVERB INPUT parameter determines whether the input to the Reverb section is ACTIVE (passing a signal) or MUTED (will not pass a signal).
MIX DIR/DLY	The MIX DIRECT/DELAY parameter is used to define the ratio of direct signal to delayed signal to be input to the reverb section.
REVERB LVL	The REVERB LEVEL parameter allows you to control the level of the reverb signal at the output in relation to the direct signal and other effect signals. This parameter is also accessable from the Mixer function.
REV DECAY	The REVERB DECAY parameter determines the length of time that the reverb signal will sound before it has completely died out.
REV HF DAMP	The REVERB HIGH FREQUENCY DAMPING parameter is used to control the decay rate of high frequency information in the reverb signal. Higher parameter settings will result in a faster decay of high frequency information.

7. Voodu Valve™ Configurations

H-GAIN, CRS, DLY, REV Configuration



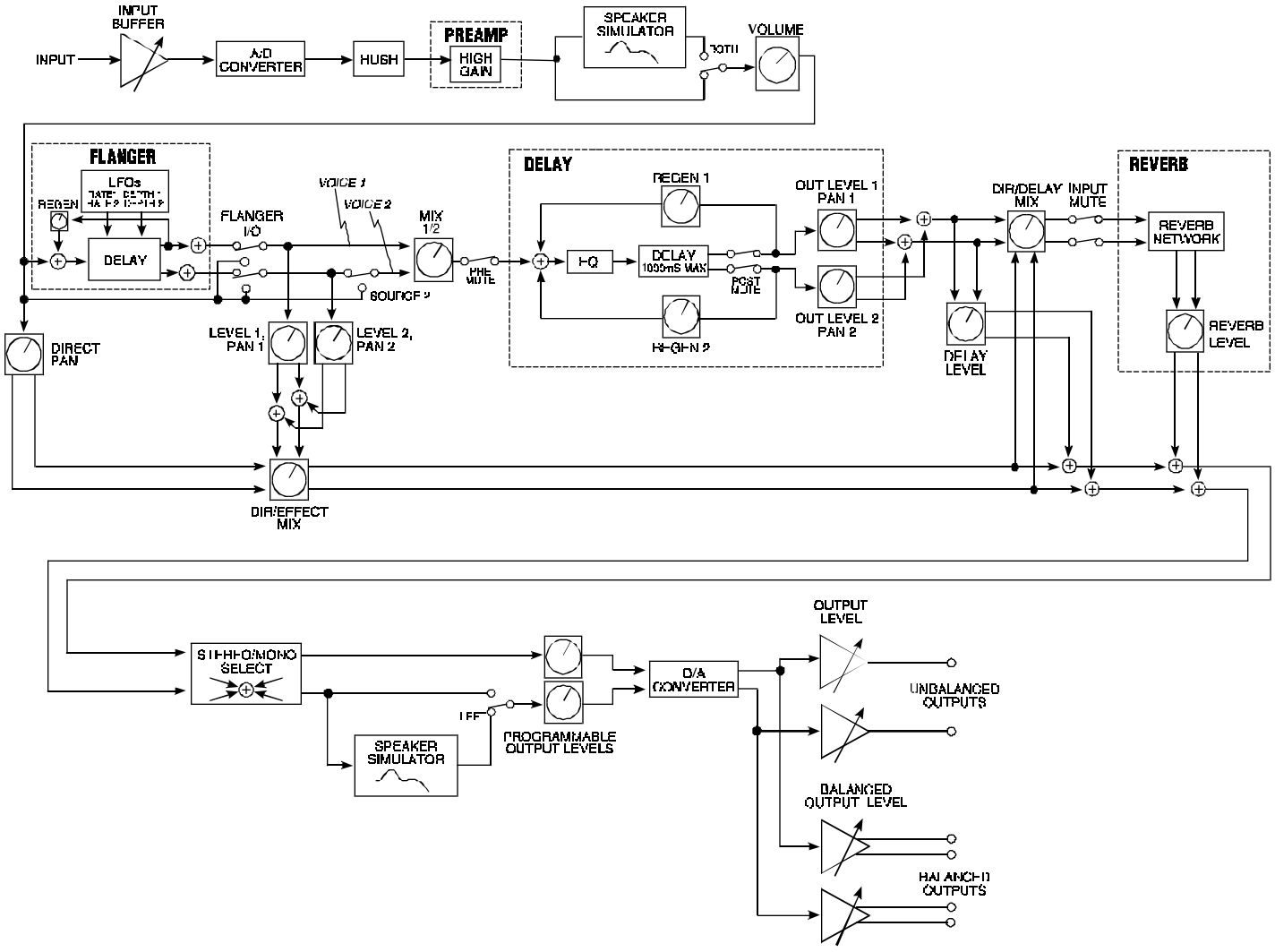
H-GAIN, CRS, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10 dB to +30 dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	0 to 127
	LEFT OUT LVL (Left Channel Output Level)	- ∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	- ∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	- ∞ to +0dB
	REVERB LVL (Reverb Signal Level)	- ∞ to +6dB
HIGH GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	12dB to 78dB
	VARIAC ADJUST (Variac Level Adjustment)	-6dB to 0dB
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

H-GAIN, CRS, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
CHORUS	CHORUS (Chorus In/Out Status)	Out, In
	LEVEL 1 (Voice 1 Level)	-∞ to 0dB
	PAN 1 (Voice 1 Panning)	L <0 to 100> R
	DEPTH 1 (Voice 1 Modulation Depth)	0 to 100
	RATE 1 (Voice 1 Modulation Rate)	0 to 254
	DELAY 1 (Voice 1 Delay Length)	2ms to 40ms
	LEVEL 2 (Voice 2 Level)	-∞ to 0dB
	PAN 2 (Voice 2 Panning)	L <0 to 100> R
	DEPTH 2 (Voice 2 Modulation Depth)	0 to 100
	RATE 2 (Voice 2 Modulation Rate)	0 to 254
	DELAY 2 (Voice 2 Delay Length)	2ms to 40ms
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000 ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000 ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

H-GAIN, FLAN, DLY, REV Configuration



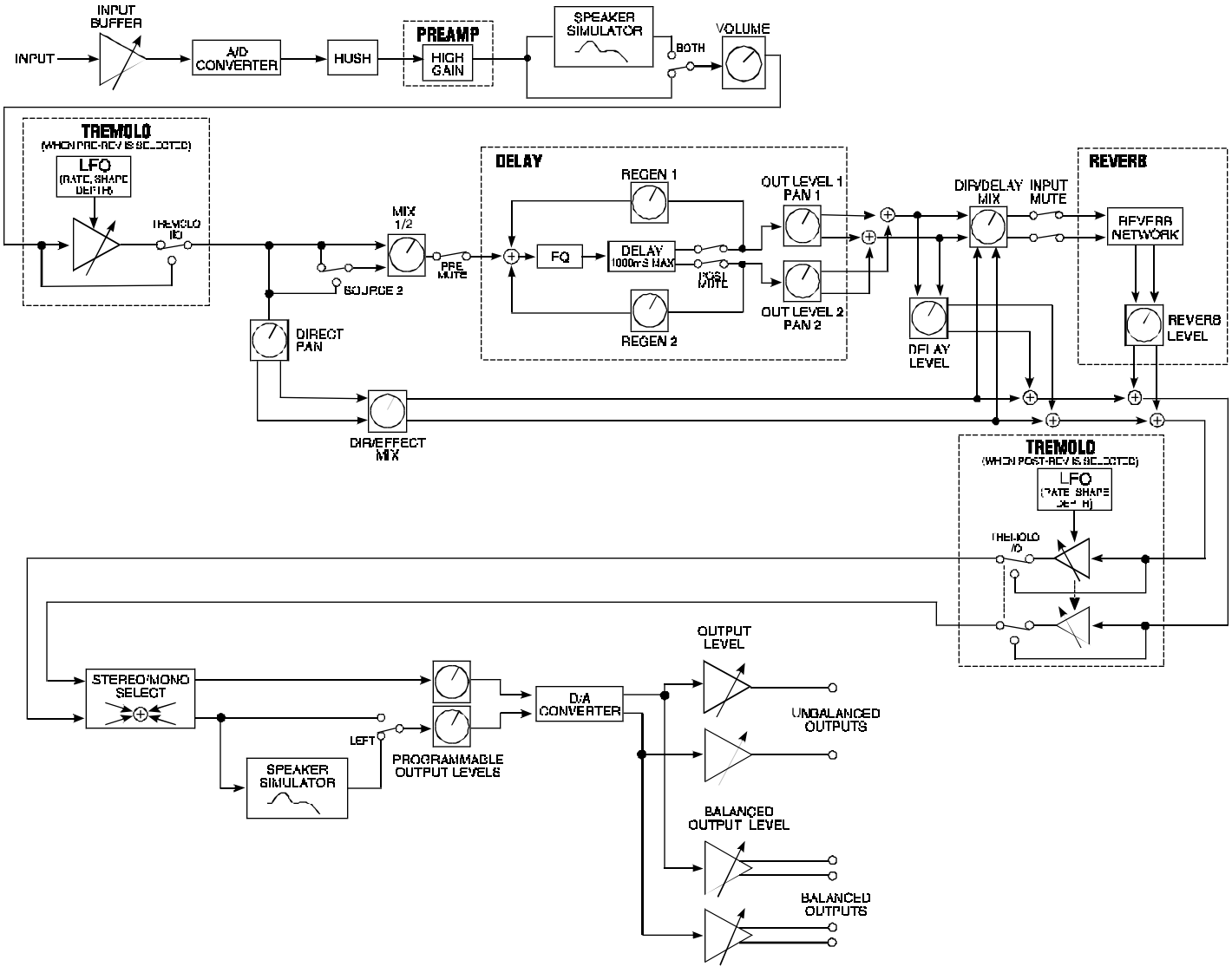
H-GAIN, FLAN, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	- ∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	- ∞ to 6dB
	RIGHT OUT LVL (Right Channel Output Level)	- ∞ to 6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	- ∞ to 0dB
	REVERB LVL (Reverb Signal Level)	- ∞ to 0dB
HIGH GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	12dB to 78dB
	VARIAC ADJUST (Variac Level Adjustment)	-6dB to 0dB
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

H-GAIN, FLAN, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
FLANGER	FLANGER (Flanger In/Out Status)	Out, In
	LEVEL 1 (Voice 1 Level)	-∞ to 0dB
	PAN 1 (Voice 1 Panning)	L <0 to 100> R
	DEPTH 1 (Voice 1 Modulation Depth)	0 to 100
	RATE 1 (Voice 1 Modulation Rate)	0 to 254
	LEVEL 2 (Voice 2 Level)	-∞ to 0dB
	PAN 2 (Voice 2 Panning)	L <0 to 100> R
	DEPTH 2 (Voice 2 Modulation Depth)	0 to 100
	RATE 2 (Voice 2 Modulation Rate)	0 ot 254
	REGEN (Flanger Regeneration Level)	-∞ to 0dB
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

H-GAIN, TREM, DLY, REV Configuration



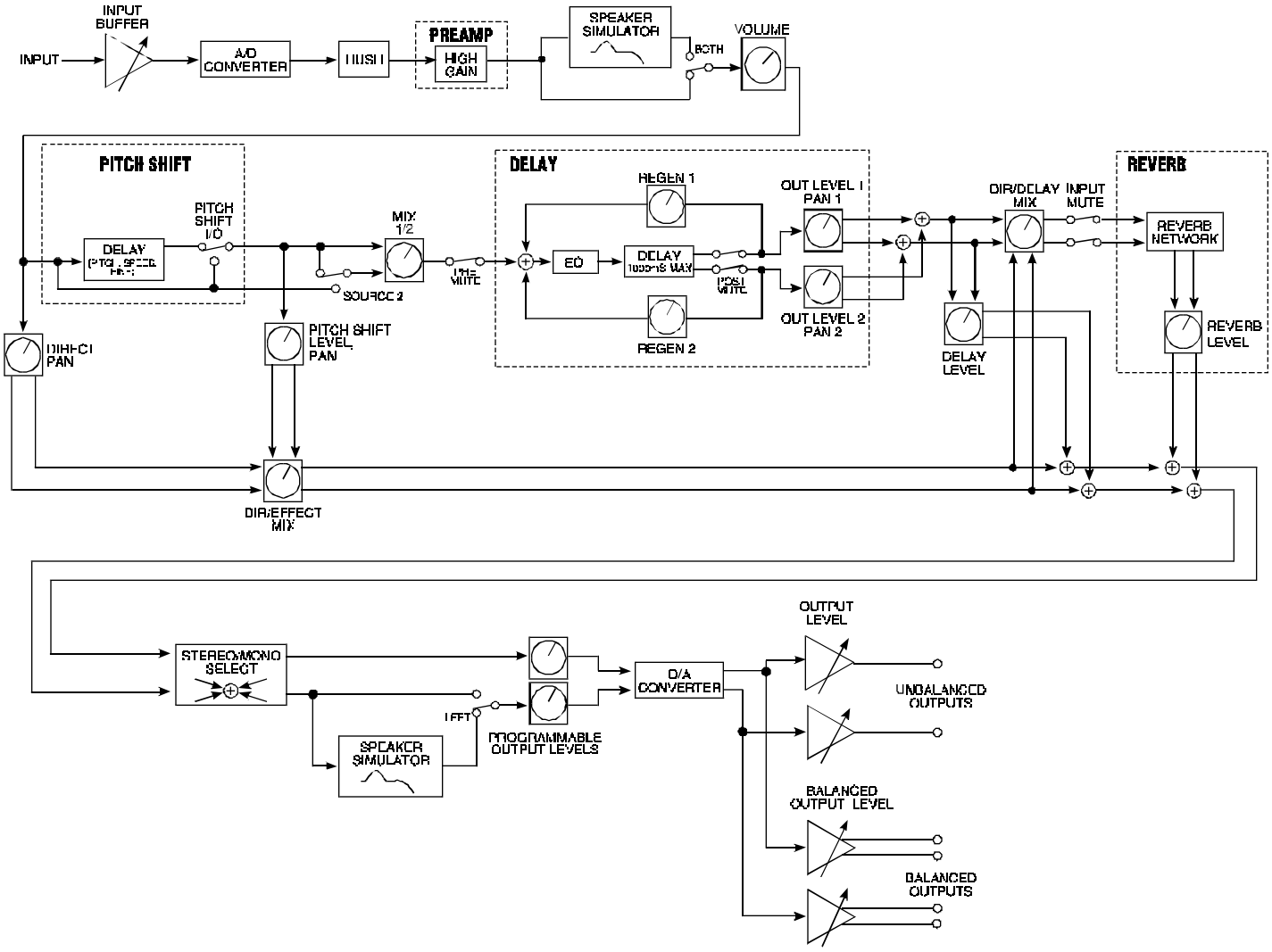
H-GAIN, TREM, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to 6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to 6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
HIGH GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	12dB to 78dB
	VARIAC ADJUST (Variac Level Adjustment)	-6dB to 0dB
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500 Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

H-GAIN, TREM, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15 B to +15dB
TREMOLO	TREMOLO (Tremolo In/Out Status)	Out, In
	LOCATION (Pre or Post Reverb Location)	Pre-Rev, Post-Rev
	DEPTH (Modulation Depth)	0 to 100
	RATE (Modulation Rate)	0 to 254
	SHAPE (Wave Shape)	Triangle, Square
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	- to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

H-GAIN, PSHF, DLY, REV Configuration



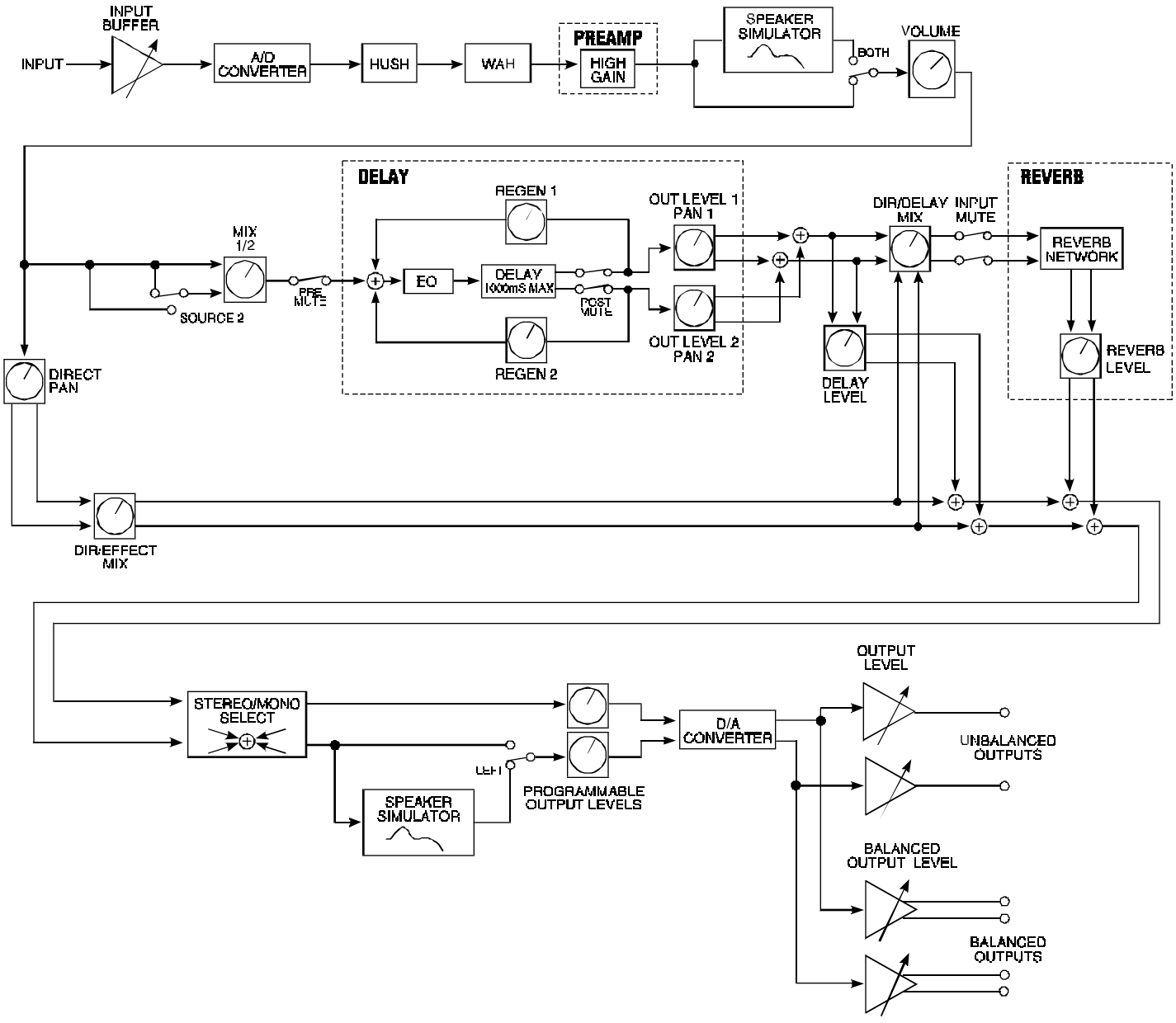
H-GAIN, PSHF, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
HIGH GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	12dB to 78dB
	VARIAC ADJUST (Variac Level Adjustment)	-6dB to 0dB
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

H-GAIN, PSHF, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
PITCH SHIFT	PITCH SHIFT (Pitch Shift In/Out Status)	Out, In
	LEVEL (Pitch Shift Signal Level)	-∞ to 0dB
	PAN (Pitch Shift Signal Panning)	L <0 to 100> R
	PITCH (Pitch Shift in 20-Cent Steps)	-2400 to +1200
	FINE (Pitch Shift in 1-Cent Steps)	-20 to +20
	SPEED (Pitch Shift Signal Speed)	Slow, Medium, Fast
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000 ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000 ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

WAH, H-GAIN, DLY, REV Configuration



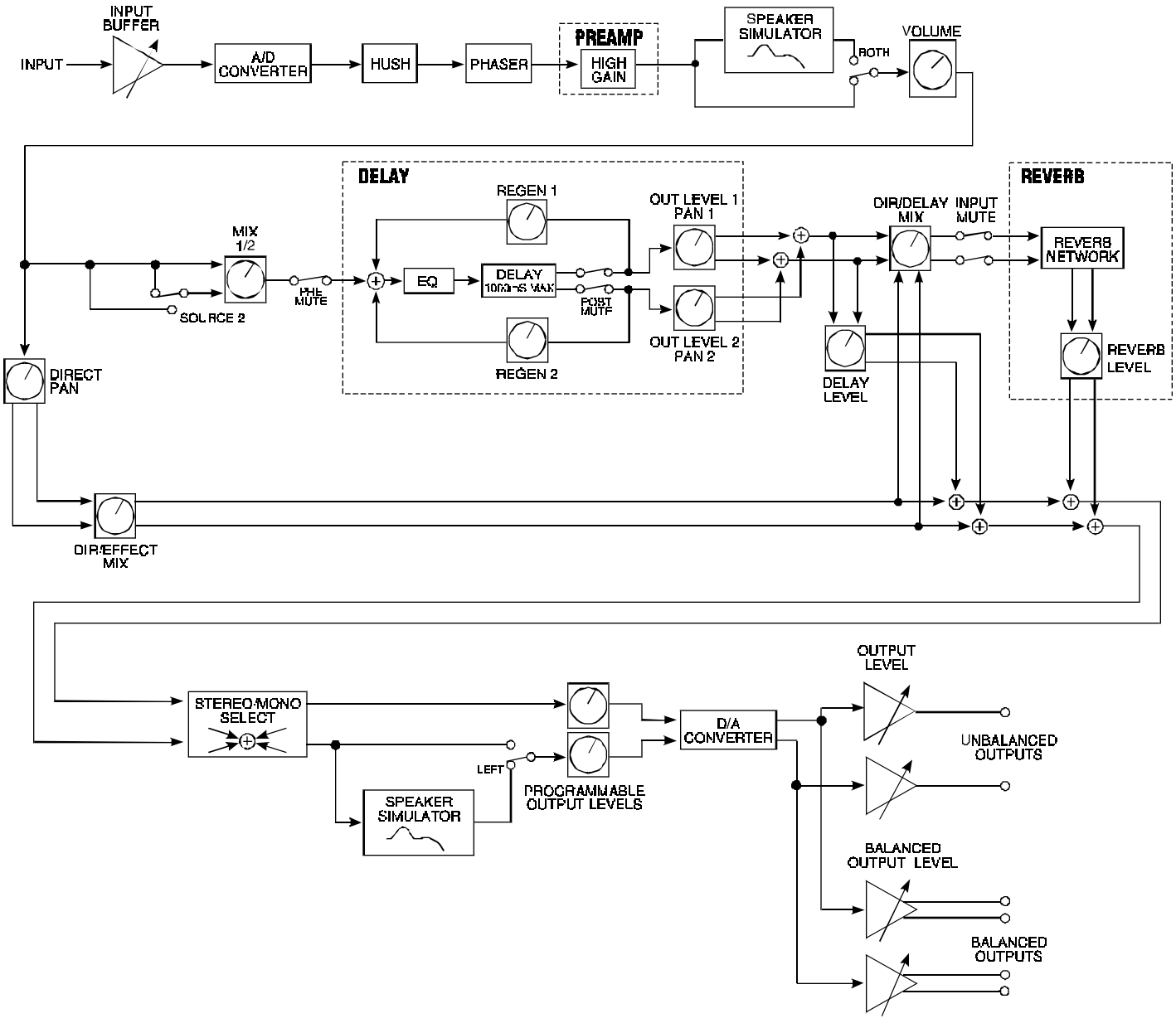
WAH, H-GAIN, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
HIGH GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	12dB to 78dB
	VARIAC ADJUST (Variac Level Adjustment)	-6dB to 0dB
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

WAH, H-GAIN, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
WAH-WAH	WAH-WAH (Wah-Wah In/Out Status)	Out, In
	WAH FREQ (Wah Frequency Select)	310Hz to 2.7kHz
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

PHAS, H-GAIN, DLY, REV Configuration



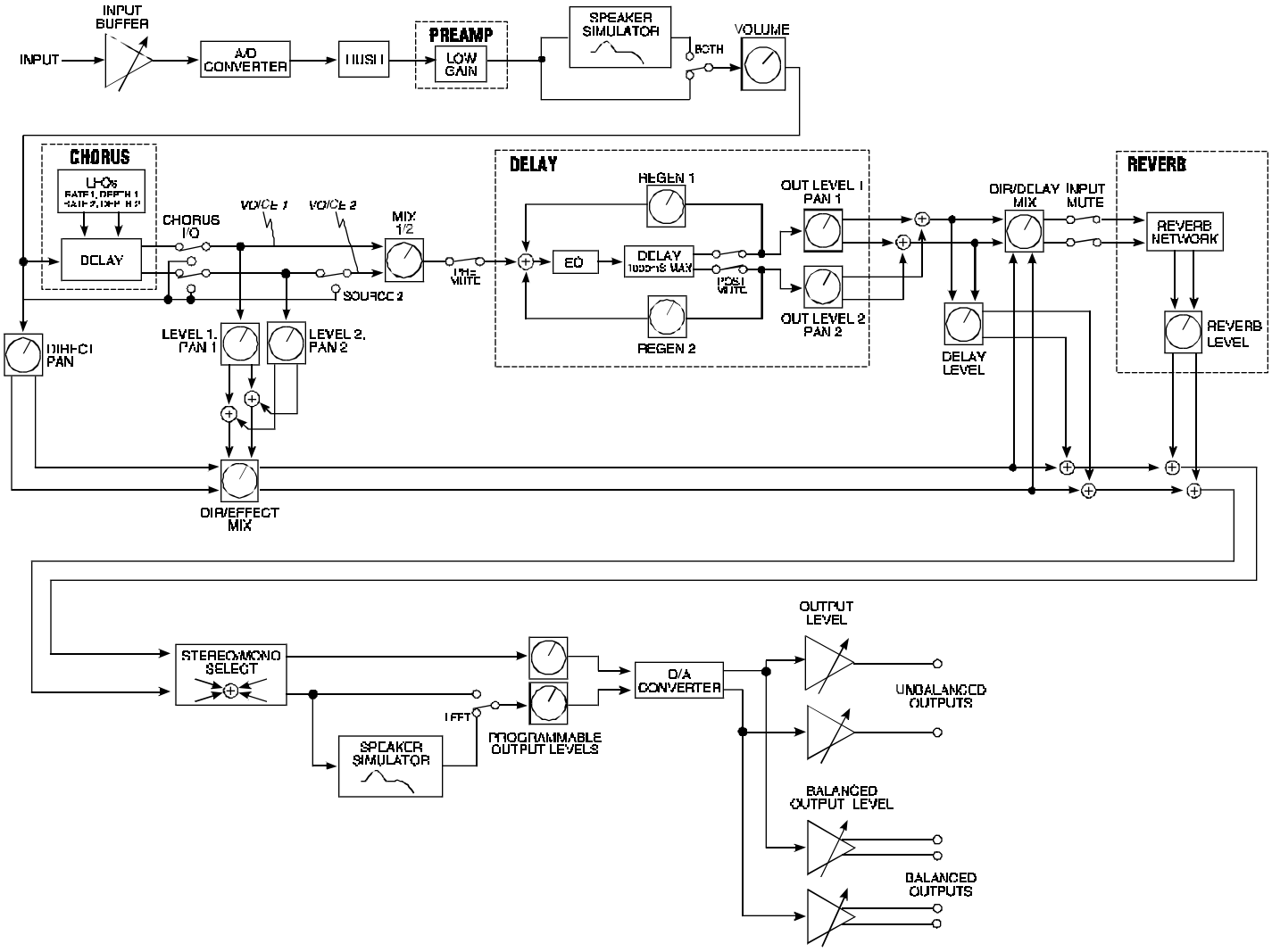
PHAS, H-GAIN, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
HIGH GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	12dB to 78dB
	VARIAC ADJUST (Variac Level Adjustment)	-6dB to 0dB
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

PHAS, H-GAIN, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
PHASER	PHASER (Phaser In/Out Status)	Out, In
	DEPTH (Amount of Modulation)	0 to 100
	RATE (Rate of Modulation)	0 to 254
	RESONANCE (Amount of Feedback)	0 to 100
	STAGES (Number of Stages)	4, 6
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

L-GAIN, CRS, DLY, REV Configuration



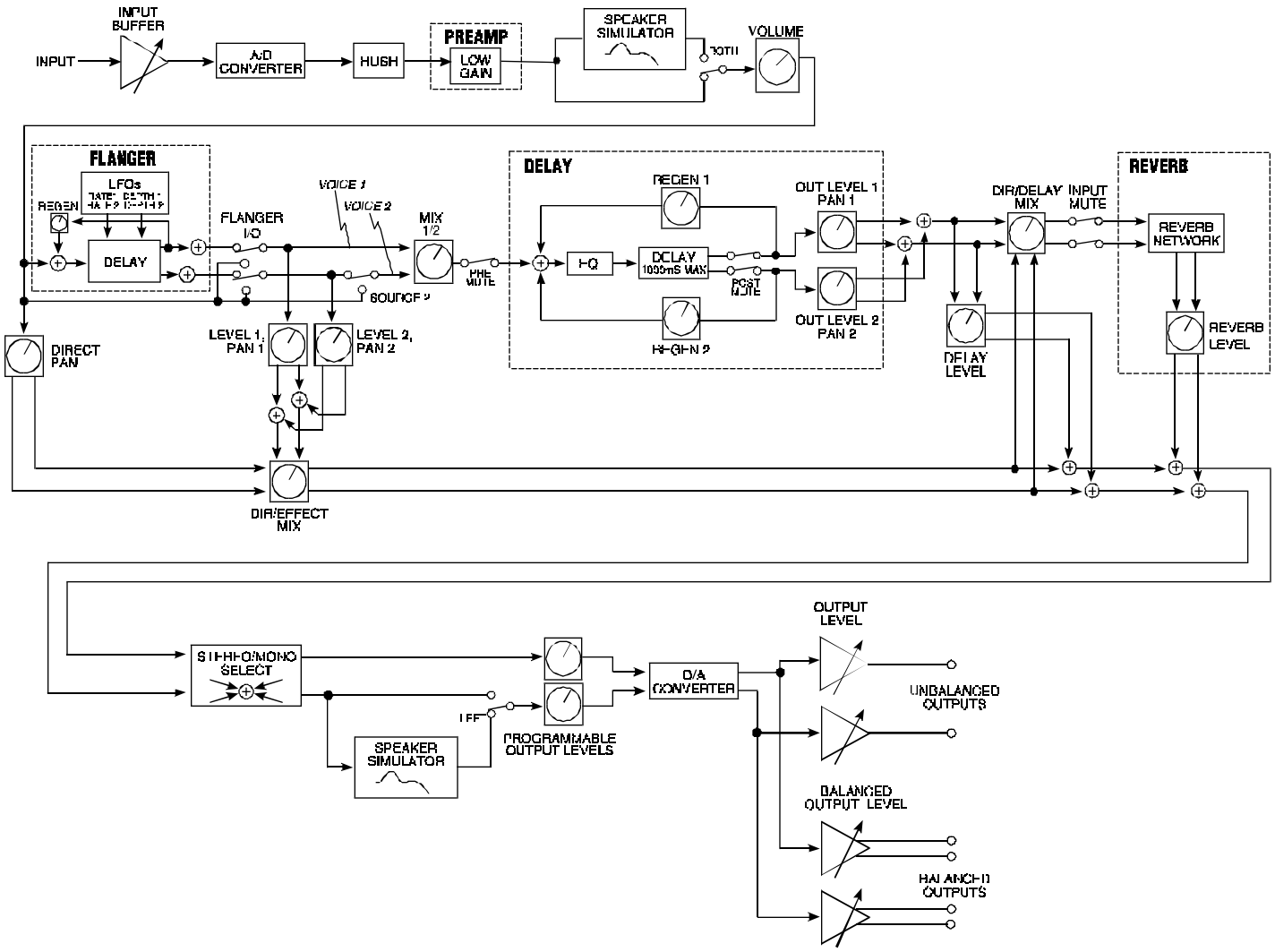
L-GAIN, CRS, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
LOW GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	0dB to 48dB
	TUBE (Tube Distortion Type)	Hard Clip, Soft Clip, Class A, Class B
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

L-GAIN, CRS, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
COMPRESSOR	COMPRESSOR (Compressor In/Out)	Out, In
	COMP THRESH (Compressor Threshold Level)	-24dB to 0dB
	COMP ATTACK (Compressor Attack Time)	1ms to 75ms
	COMP RELEASE (Compressor Release Time)	0.05 to 2.0s
CHORUS	CHORUS (Chorus In/Out Status)	Out, In
	LEVEL 1 (Voice 1 Level)	-∞ to 0dB
	PAN 1 (Voice 1 Panning)	L <0 to 100> R
	DEPTH 1 (Voice 1 Modulation Depth)	0 to 100
	RATE 1 (Voice 1 Modulation Rate)	0 to 254
	DELAY 1 (Voice 1 Delay Length)	2ms to 40ms
	LEVEL 2 (Voice 2 Level)	-∞ to 0dB
	PAN 2 (Voice 2 Panning)	L <0 to 100> R
	DEPTH 2 (Voice 2 Modulation Depth)	0 to 100
	RATE 2 (Voice 2 Modulation Rate)	0 to 254
	DELAY 2 (Voice 2 Delay Length)	2ms to 40ms
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

L-GAIN, FLAN, DLY, REV Configuration



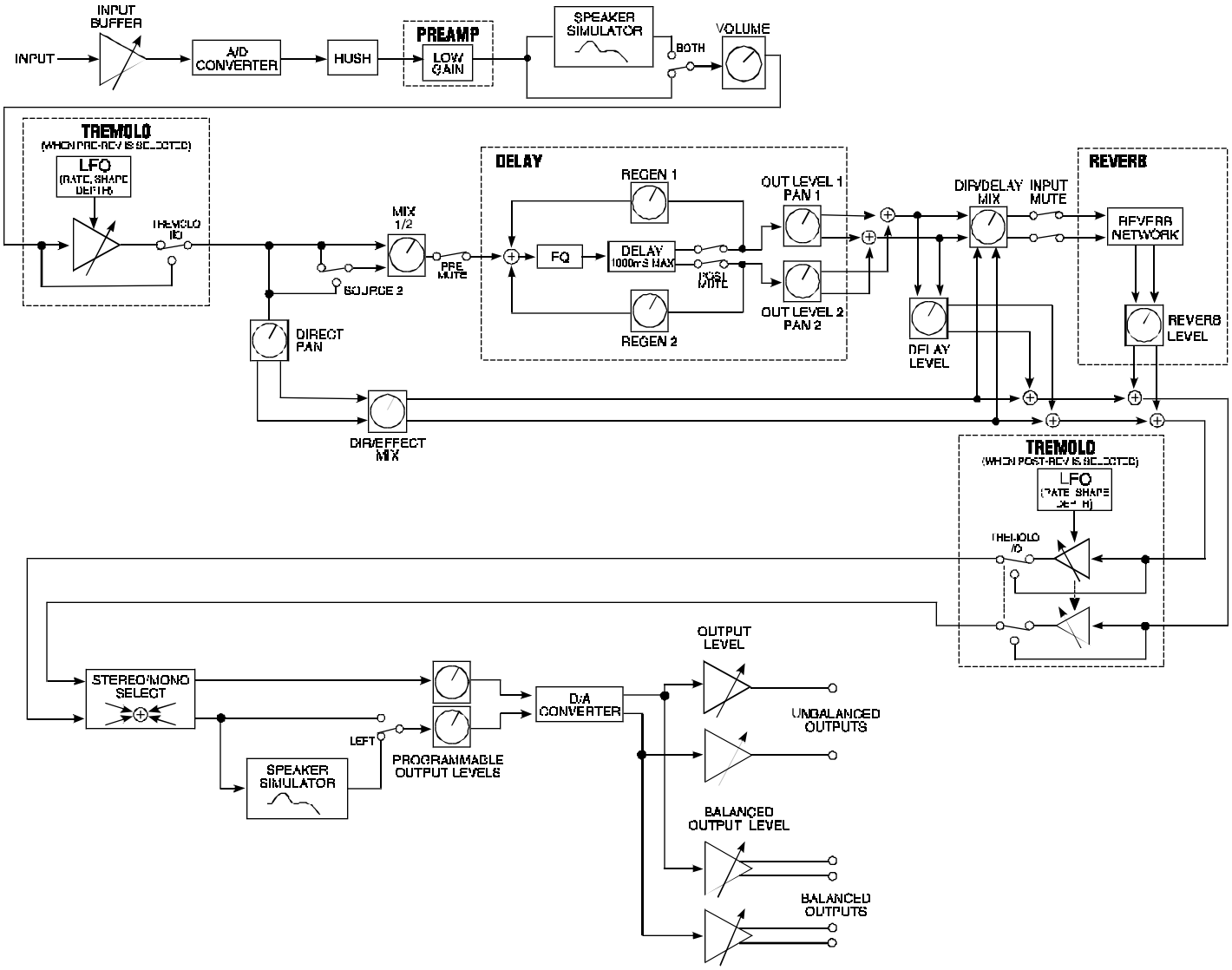
L-GAIN, FLAN, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
LOW GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	0dB to 48dB
	TUBE (Tube Distortion Type)	Hard Clip, Soft Clip, Class A, Class B
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

L-GAIN, FLAN, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
COMPRESSOR	COMPRESSOR (Compressor In/Out)	Out, In
	COMP THRESH (Compressor Threshold Level)	-24dB to 0dB
	COMP ATTACK (Compressor Attack Time)	1ms to 75ms
	COMP RELEASE (Compressor Release Time)	0.05 to 2.0s
FLANGER	FLANGER (Flanger In/Out Status)	Out, In
	LEVEL 1 (Voice 1 Level)	-∞ to 0dB
	PAN 1 (Voice 1 Panning)	L <0 to 100> R
	DEPTH 1 (Voice 1 Modulation Depth)	0 to 100
	RATE 1 (Voice 1 Modulation Rate)	0 to 254
	LEVEL 2 (Voice 2 Level)	-∞ to 0dB
	PAN 2 (Voice 2 Panning)	L <0 to 100> R
	DEPTH 2 (Voice 2 Modulation Depth)	0 to 100
	RATE 2 (Voice 2 Modulation Rate)	0 to 254
	REGEN (Flanger Regeneration Level)	-∞ to 0dB
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

L-GAIN, TREM, DLY, REV Configuration



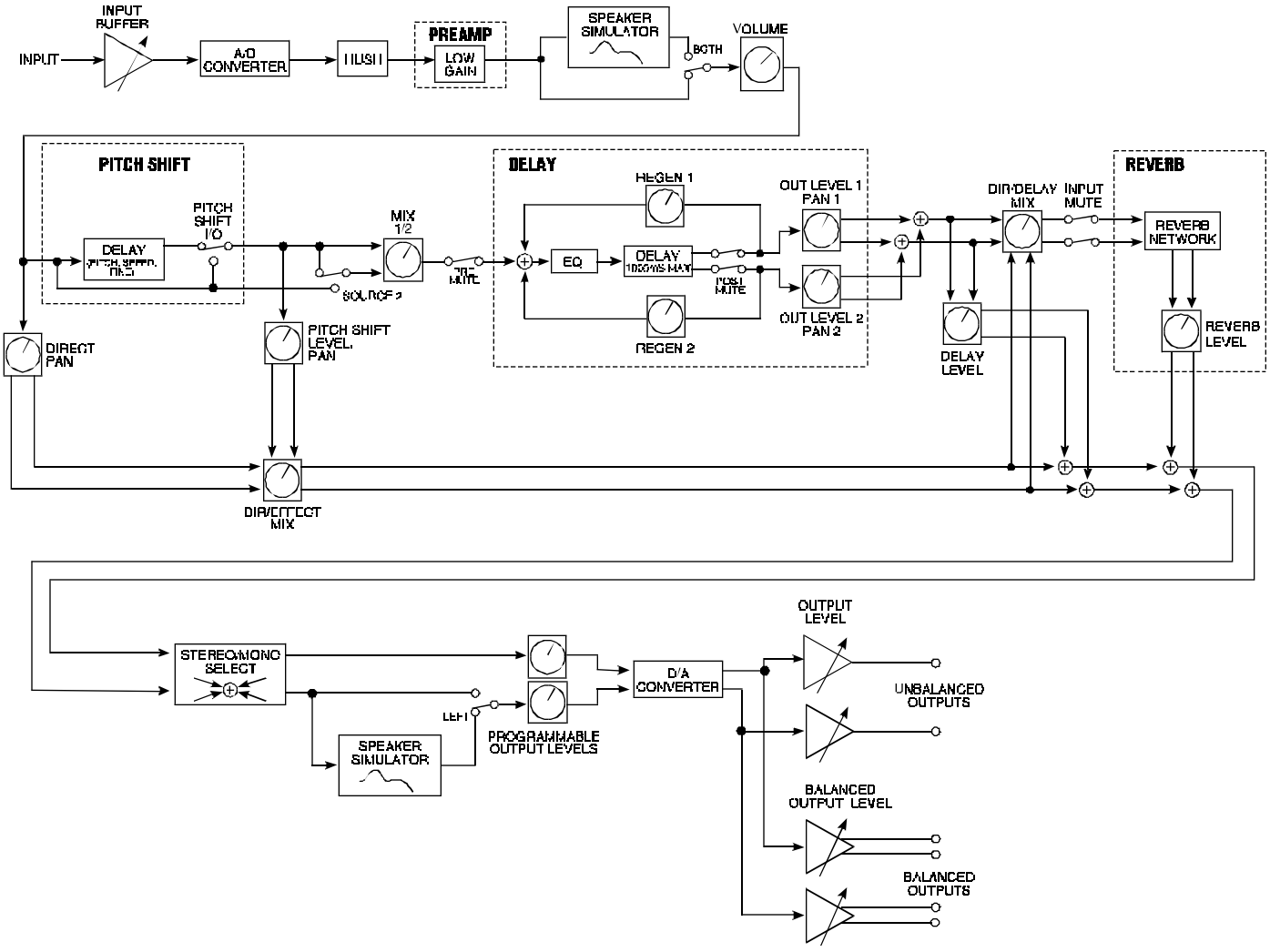
L-GAIN, TREM, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
LOW GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	0dB to 48dB
	TUBE (Tube Distortion Type)	Hard Clip, Soft Clip, Class A, Class B
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

L-GAIN, TREM, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
COMPRESSOR	COMPRESSOR (Compressor In/Out)	Out, In
	COMP THRESH (Compressor Threshold Level)	-24dB to 0dB
	COMP ATTACK (Compressor Attack Time)	1ms to 75ms
	COMP RELEASE (Compressor Release Time)	0.05 to 2.0s
TREMOLO	TREMOLO (Tremolo In/Out Status)	Out, In
	LOCATION (Pre/Post Reverb Location)	Pre-Rev, Post-Rev
	DEPTH (Modulation Depth)	0 to 100
	RATE (Modulation Rate)	0 to 254
	SHAPE (Wave Shape)	Triangle, Square
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

L-GAIN, PSHF, DLY, REV Configuration



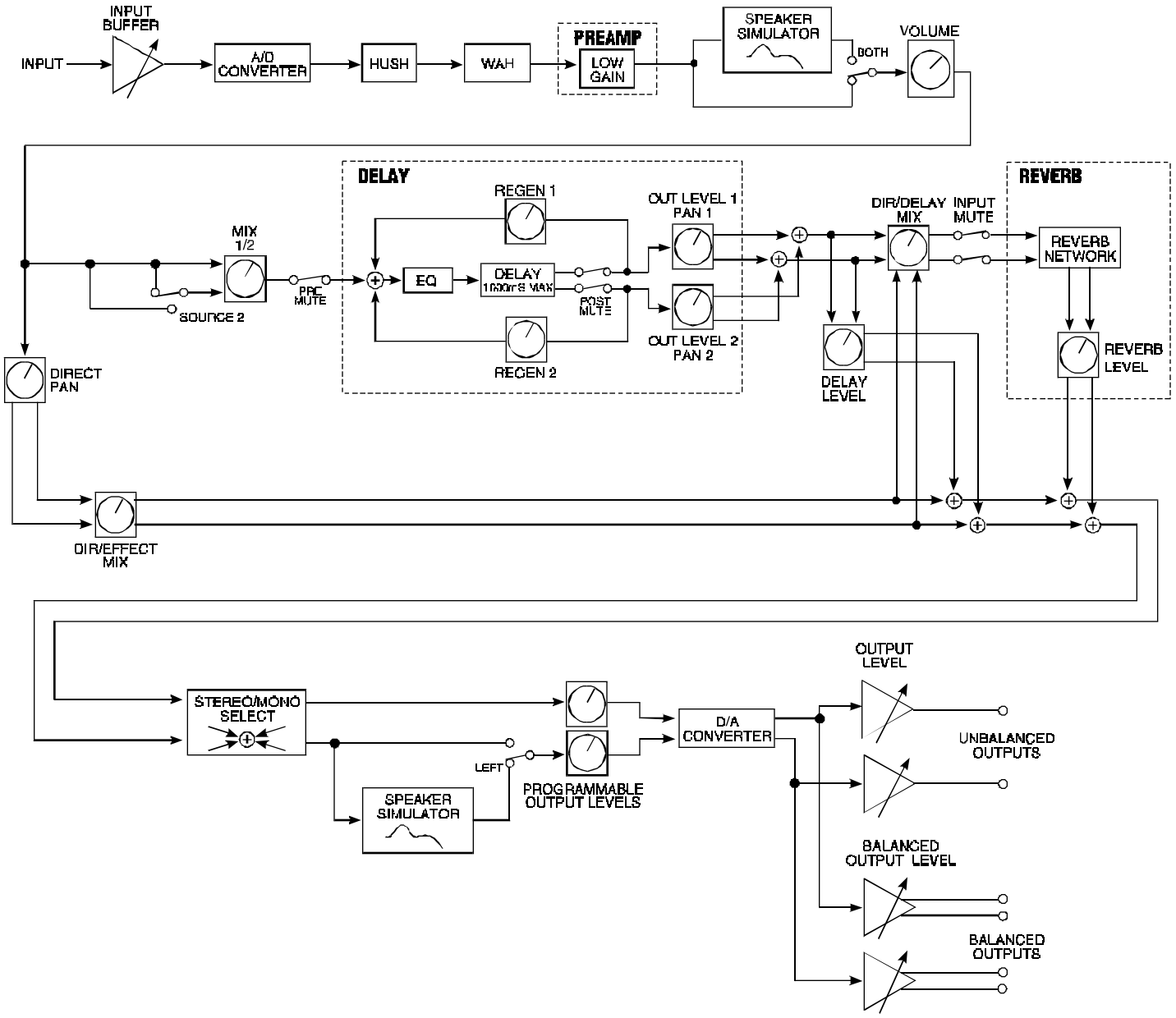
L-GAIN, PSHF, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
LOW GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	0dB to 48dB
	TUBE (Tube Distortion Type)	Hard Clip, Soft Clip, Class A, Class B
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

L-GAIN, PSHF, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
COMPRESSOR	COMPRESSOR (Compressor In/Out)	Out, In
	COMP THRESH (Compressor Threshold Level)	-24dB to 0dB
	COMP ATTACK (Compressor Attack Time)	1ms to 75ms
	COMP RELEASE (Compressor Release Time)	0.05 to 2.0s
PITCH SHIFT	PITCH SHIFT (Pitch Shift In/Out Status)	Out, In
	LEVEL (Pitch Shift Signal Level)	-∞ to 0dB
	PAN (Pitch Shift Signal Panning)	L <0 to 100> R
	PITCH (Pitch Shift in 20-Cent Steps)	-2400 to +1200
	FINE (Pitch Shift in 1-Cent Steps)	-20 to +20
	SPEED (Pitch Shift Signal Speed)	Slow, Medium, Fast
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

WAH, L-GAIN, DLY, REV Configuration



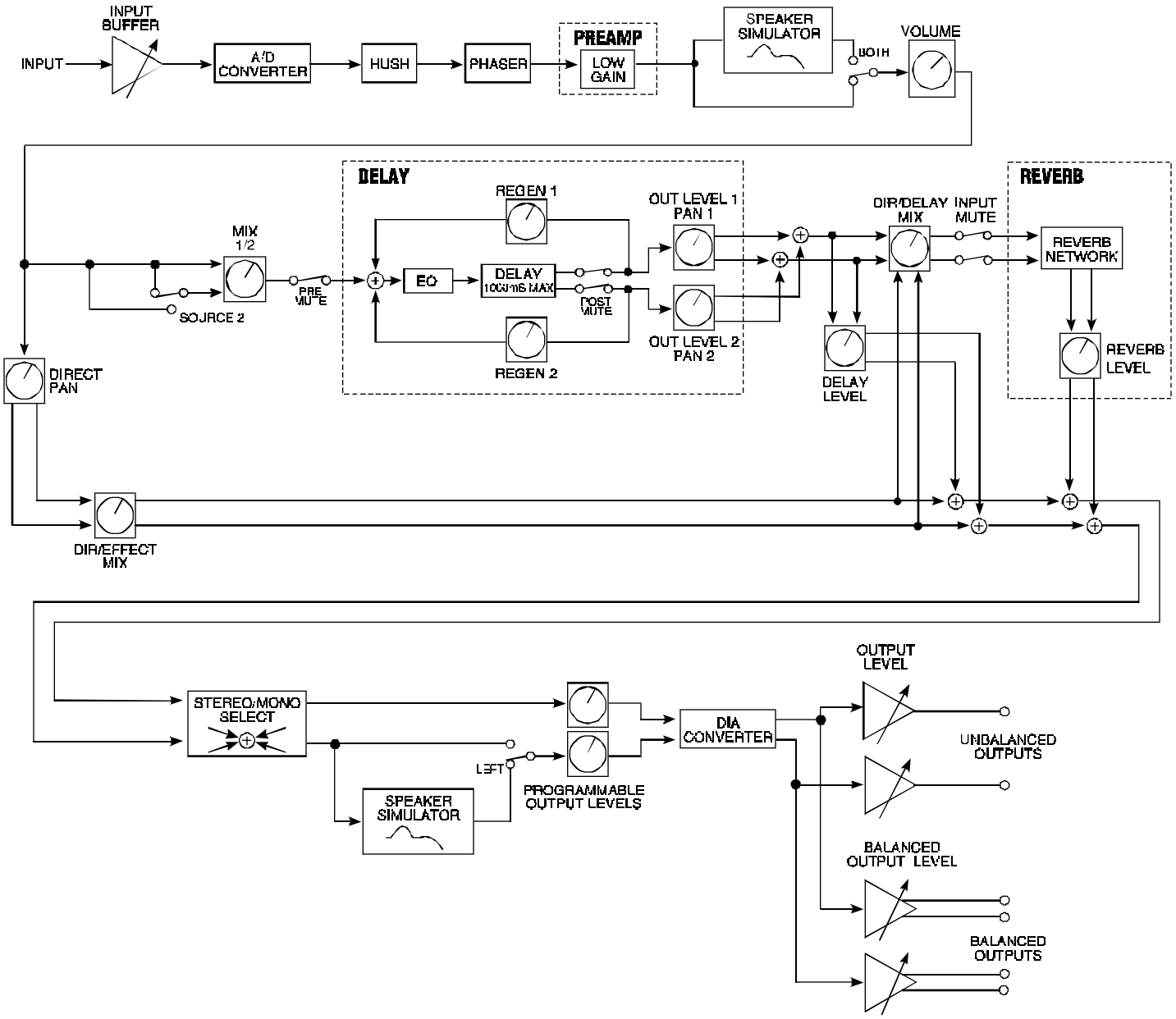
WAH, L-GAIN, DLY, REV Parameter list

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
LOW GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	0dB to 48dB
	TUBE (Tube Distortion Type)	Hard Clip, Soft Clip, Class A, Class B
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

WAH, L-GAIN, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
COMPRESSOR	COMPRESSOR (Compressor In/Out)	Out, In
	COMP THRESH (Compressor Threshold Level)	-24dB to 0dB
	COMP ATTACK (Compressor Attack Time)	1ms to 75ms
	COMP RELEASE (Compressor Release Time)	0.05 to 2.0s
WAH-WAH	WAH-WAH (Wah-Wah In/Out Status)	Out, In
	WAH FREQ (Wah Frequency select)	310Hz to 2.6kHz
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 Select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

PHASE, L-GAIN, DLY, REV Configuration



PHAS, L-GAIN, DLY, REV Parameter list

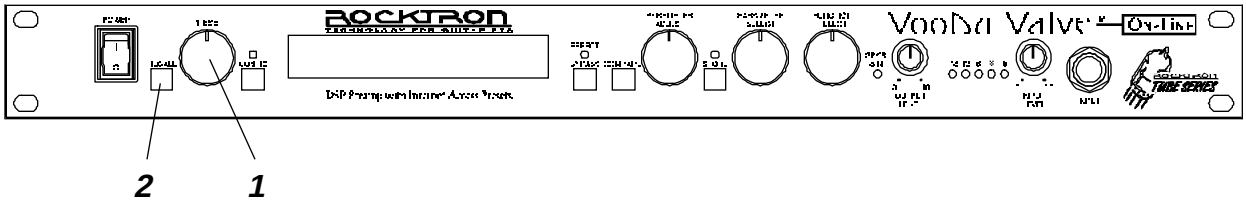
FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
GLOBAL	OUTPUT (Output Level)	Stereo, Mono
	SPKR SIM (Speaker Simulator Lock)	Unlock, Lock Off, Lock L, Lock B
	HUSH OFFSET	-10dB to +30dB
	MUTE	Off, On
MIXER	VOLUME (Volume Level)	-∞ to 0dB
	LEFT OUT LVL (Left Channel Output Level)	-∞ to +6dB
	RIGHT OUT LVL (Right Channel Output Level)	-∞ to +6dB
	MIX (Direct/Effect Mix Level)	DIR <0 to 100> EFF
	DIR PAN (Direct Signal Panning)	L <0 to 100> R
	DELAY LVL (Delay Signal Level)	-∞ to 0dB
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
LOW GAIN	TUBE GAIN	Low, High
	GAIN (Gain Level)	0dB to 48dB
	TUBE (Tube Distortion Type)	Hard Clip, Soft Clip, Class A, Class B
	BASS LVL (Post Bass Level)	-15dB to +15dB
	MID LVL (Post Midband Level)	-15dB to +15dB
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
HUSH	HUSH (Hush In/Out)	Out, In
	EXP THRESH (Expander Threshold Level)	-90dB to -27dB
PRE EQ (EXPERT)	LF LEVEL (Pre Low Frequency Level)	-15dB to +6dB
	LF FREQ (Pre Low Frequency Select)	63Hz to 500Hz
	MID LEVEL (Pre Midband Level)	-15dB to +12dB
	MID FREQ (Pre Mid Frequency Select)	500Hz to 4kHz
	MID BW (Pre Mid Bandwidth)	0.2 to 2.0 octaves
POST EQ (EXPERT)	BASS LVL (Post Bass Level)	-15dB to +15dB
	BASS FREQ (Post Bass Frequency Select)	63Hz to 500Hz
	BASS BW (Post Bass Bandwidth)	0.2 to 2.0 octaves
	MID LVL (Post Midband Level)	-15dB to +15dB
	MID FREQ (Post Mid Frequency Select)	250Hz to 2kHz
	MID BW (Post Mid Bandwidth)	0.2 to 2.0 octaves
	TREBLE LVL (Post Treble Level)	-15dB to +15dB
	TREBLE FRQ (Post Treble Frequency Select)	1kHz to 8kHz
	TREBLE BW (Post Treble Bandwidth)	0.2 to 2.0 octaves
	PRESENCE LVL (Post Presence Level)	-15dB to +15dB
	PRES FREQ (Post Presence Frequency Select)	2kHz to 8kHz
	PRES BW (Post Presence Bandwidth)	0.2 to 2.0 octaves

PHAS, L-GAIN, DLY, REV Parameter list *(cont'd)*

FUNCTION (via FUNCTION SELECT control)	PARAMETER LIST (via PARAMETER SELECT control)	RANGE (via PARAMETER ADJUST control)
SPEAKER SIM	SPKR SIM (Speaker Simulator Status)	Off, Left, Both
	SPKR TYPE (Speaker Type)	15, 12, 10, 8, Full
	MIC POSITION (Microphone Position)	-15dB to +15dB
	REACTANCE (Reactance Level)	-15dB to +15dB
COMPRESSOR	COMPRESSOR (Compressor In/Out)	Out, In
	COMP THRESH (Compressor Threshold Level)	-24dB to 0dB
	COMP ATTACK (Compressor Attack Time)	1ms to 75ms
	COMP RELEASE (Compressor Release Time)	0.05 to 2.0s
PHASER	PHASER (Phaser In/Out Status)	Out, In
	DEPTH (Amount of Modulation)	0 to 100
	RATE (Rate of Modulation)	0 to 254
	RESONANCE (Amount of Feedback)	0 to 100
	STAGES (Number of Stages)	4, 6
DELAY	DELAY (Delay Status)	Muted, Active
	MUTE TYPE (Mute Type Status)	Pre, Post, Both
	DELAY LVL (Delay Level)	-∞ to 0dB
	MIX (Source 1/Source 2 Mix Level)	S1 <0 to 100> S2
	SOURCE 2 (Source 2 select)	Dir, Voice 2
	DLY HF DAMP (Delay High Frequency Damping)	0 to 99
	OUT LEVEL 1 (Delay 1 Level)	-∞ to 0dB
	PAN 1 (Delay 1 Panning)	L <0 to 100> R
	DLY TIME1 (Delay 1 Length)	0 to 1000ms
	REGEN 1 (Delay 1 Regeneration)	-∞ to 0dB
	OUT LEVEL 2 (Delay 2 Level)	-∞ to 0dB
	PAN 2 (Delay 2 Panning)	L <0 to 100> R
	DLY TIME2 (Delay 2 Length)	0 to 1000ms
	REGEN 2 (Delay 2 Regeneration)	-∞ to 0dB
REVERB	REV INPUT (Reverb Input Status)	Muted, Active
	MIX (Direct/Delay Mix Level)	Dir <0 to 100> Dly
	REVERB LVL (Reverb Signal Level)	-∞ to 0dB
	REV DECAY (Reverb Decay Length)	0 to 99
	REV HF DAMP (Reverb High Frequency Damping)	0 to 99

8. Operating the Voodu Valve™

Selecting a preset



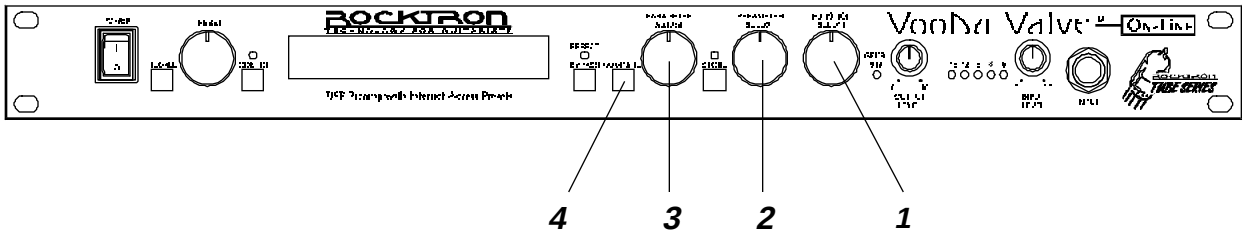
Step 1 Turn the PRESET control to the desired preset you wish to recall. The display will flash the selected preset number and title and "PRESS RECALL FOR" alternately.

29 PRESET TITLE ↔ **PRESS RECALL FOR**

Step 2 Press the RECALL button to recall the preset you have selected.

29 PRESET TITLE

Changing preset parameters



Step 1 Turn the FUNCTION SELECT control to select the function heading which contains the parameter(s) you wish to change.

**** REVERB ****

Step 2 Turn the PARAMETER SELECT control to the specific parameter you wish to change.

REV DECAY	59

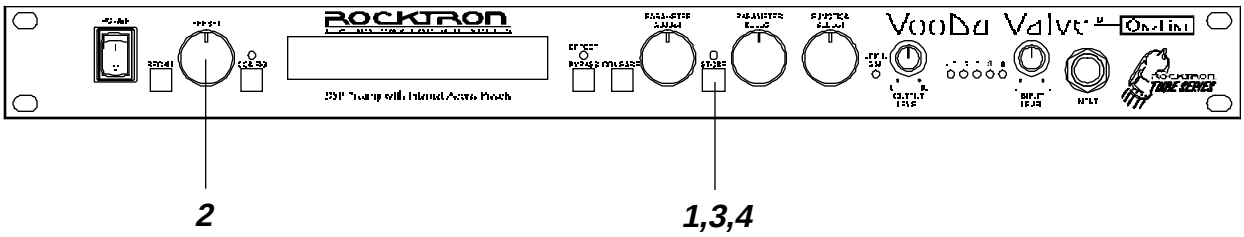
Step 3 Turn the PARAMETER ADJUST control to alter the parameter value. The LED above the STORE button will light, indicating that the preset has had a parameter altered from its stored value.

REV DECAY	32

Step 4 The COMPARE button may now be pressed to compare the sound of the stored parameter value to the sound of the altered parameter value.

REV DECAY	59

Storing changed preset parameters



Step 1 While viewing a function or parameter title, press the STORE button to start the store procedure. The display will now alternate between the destination preset number and title and "STORE AT PRESET".

29 PRESET TITLE ⟷ **STORE AT PRESET**

Step 2 Turn the PRESET control to select the desired preset number to store the new parameter values into. (If you wish to store the new parameter values into the current preset number, this step is not necessary.) The display will now alternate between the new preset number and "STORE AT PRESET".

57 PRESET TITLE ⟷ **STORE AT PRESET**

Note: Turning the FUNCTION SELECT control at this time will cancel the store procedure.

Step 3 Press the STORE button a second time to store the new values into the selected preset number. The display will briefly flash "STORED" before displaying the new preset number and title. (Note: Turning either the FUNCTION SELECT or PARAMETER SELECT controls before completing this step will cancel the store procedure.)

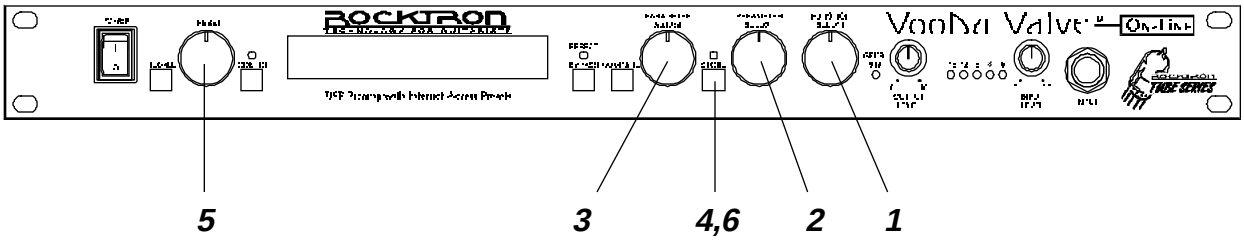
STORED

NOTE: *If a preset with altered parameters is exited before completing Step 3, all edited parameter values will be lost. When saving altered parameters, make sure the display flashed "STORED" before exiting the store procedure.*

Step 4 After the parameter values have been stored, the Voodu Valve will display "COPY TITLE TOO?". This message is displayed only when storing into a new preset number and allows you to copy the title from the altered preset into the new preset location. To copy the title from the altered preset, press the STORE button a third time and the display will again flash "STORED".

If you do not wish to copy the title from the altered preset, skip Step 4 and turn the PRESET or FUNCTION SELECT control to exit the store procedure.

Selecting a configuration



Step 1 To select a new configuration, turn the FUNCTION SELECT control clockwise until the Voodu Valve displays "CONFIG SELECT".

CONFIG SELECT

Step 2 Turn the PARAMETER SELECT control clockwise to display the current configuration.

H-GAIN,CRS,DLY,REV

Step 3 Use the PARAMETER ADJUST control to select the desired configuration. *(The STORE LED will light when the parameter is altered.)*

WAH,L-GAIN,DLY,REV

Note: The new configuration will not take effect until it is stored.

Step 4 Press the STORE button to initiate the store procedure. The Voodu Valve display will alternate between the current preset number/title and "STORE AT PRESET".

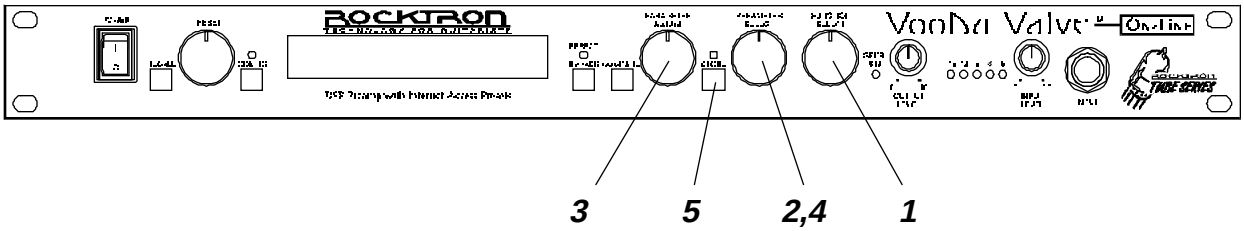
29 PRESET TITLE ⟷ **STORE AT PRESET**

Step 5 Turn the PRESET control to select the preset you wish to store the new configuration into. *(If you want to store the selected configuration into the current preset, skip this step.)*

Step 6 Press the STORE button a second time to store the selected configuration into the selected preset. The Voodu Valve will display "STORED" briefly.

When a new configuration is stored into a preset, each of the parameters contained in the new configuration that were contained in the previous configuration will retain the same values. All new configuration parameters that were not contained in the old configuration will be set to their default value (or their lowest value).

Editing a preset title



Step 1 To begin the Title Edit function, turn the FUNCTION SELECT control clockwise until the Voodu Valve displays "TITLE EDIT".

**** TITLE EDIT ****

Step 2 Turn the PARAMETER SELECT control clockwise to initiate the Title Edit mode. Turning this control will also select the character location to be edited. A flashing decimal will follow the character currently selected.

57 P.RESET TITLE

(Flashing Decimal)

Step 3 Use the PARAMETER ADJUST control to select the desired character for the current position (flashing decimal).

57 M.RESET TITLE

Step 4 To edit the character in the next position, turn the PARAMETER SELECT control one step clockwise. The flashing decimal will move to the next character.

57 MR.ESET TITLE

(Flashing decimal)

Step 5 After all the characters have been edited as needed, press the STORE button to save the new title memory. The Voodu Valve will flash "STORED" briefly.

Note: The STORE button must be pressed to save the new title. Exiting the Title Edit function before pressing the STORE button will erase any editing that was done in Title Edit.

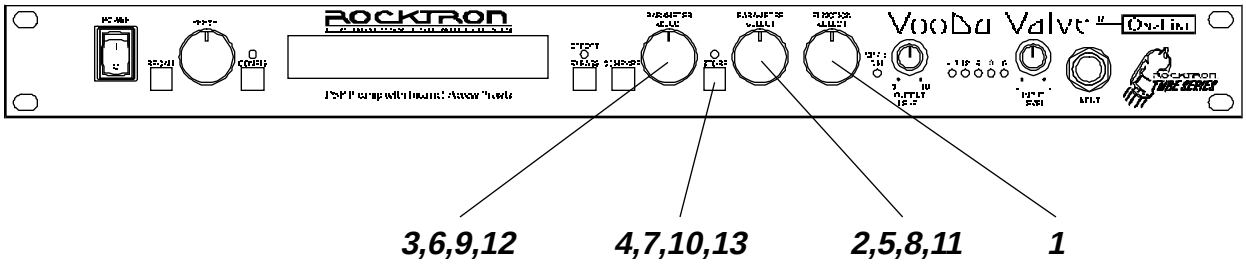
Also, after flashing "STORED", the Voodu Valve will remain in the Title Edit mode. You may either (a) turn the PRESET control to display and edit other preset titles without exiting and re-entering Title Edit, or (b) turn the FUNCTION SELECT control to exit the Title Edit mode.

Controller Assignments

The Controller Assignment function allows for specific Voodu Valve adjustable parameters to be mapped (or assigned) to a MIDI controller for real-time control by an expression pedal.

The Controller Assignment option also lets you store an upper and lower parameter value limit which the controller cannot exceed. For example, when using an expression pedal with a Rocktron All Access™ to send continuous control changes to control the "PITCH" parameter, an upper limit of +300 can be set and a lower limit of -200 can be set—even though the actual parameter range is from +1200 to -2400. When the expression pedal is at its heel position in this example, the "PITCH" parameter will be at -200, while at its toe position it will be at +300.

Up to eight controllers can be assigned for each individual preset.



Step 1 To access the Controller Assign function, turn the FUNCTION SELECT control clockwise to "CONTROLLER ASSIGN".

CONTROLLER ASSIG

Step 2 Turn the PARAMETER SELECT control for the first parameter of the Controller Assign function. This parameter allows you to select a controller number for the NUMB 1 parameter to respond to.

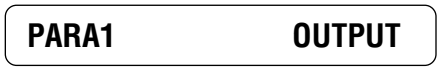
NUMB 1	XXX

This parameter (NUMB 1 only) also gives you the option of selecting "ADJ". When "ADJ" is selected, the parameter assigned to the first controller (PARA 1) can be instantly accessed by turning the PARAMETER ADJUST control when the preset title is displayed. This allows you to access a parameter that you adjust frequently without paging through function headings and parameters.

Step 3 Use the PARAMETER ADJUST control to select the controller number to be assigned to the PARA 1 parameter. Any number from 0 to 120 may be selected, as well as OFF *(will not respond to MIDI control changes)*. Match the number selected for this parameter with the controller number on the MIDI transmitter.

Step 4 After selecting the desired controller number, press the STORE button to save the number for the NUMB 1 parameter. "STORED" will flash briefly on the display.

Step 5 Turn the PARAMETER SELECT control one step clockwise to display the parameter that is currently mapped to the NUMB 1 control number.



Step 6 Turn the PARAMETER ADJUST control to scroll through the available parameters for the current configuration.

Step 7 After selecting the parameter that you which to assign to a controller, press the STORE button to save it. The Voodu Valve will flash "STORED" briefly.

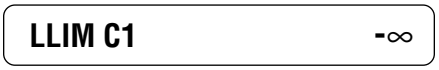
NOTE: *The Voodu Valve allows you to select an upper and lower value limit which the parameter cannot exceed. For example, if a parameter has a value range from -∞ to 0dB, yet you would like the range of the parameter to vary from only -12dB to -2dB, you may set a lower limit of -12 and an upper limit of -2 via the Upper and Lower Limit parameters. When a parameter is stored in the Controller Assign function (Step 7), the maximum parameter value is automatically stored as the upper limit, while the minimum value is stored as the lower limit.*

Step 8 Turn the PARAMETER SELECT control one step clockwise to display the Upper Limit parameter (for PARA1).

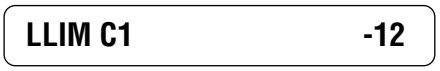
Step 9 Use the PARAMETER ADJUST control to choose the highest value that the parameter is not to exceed through MIDI control changes.

Step 10 After selecting a value for the upper limit, press the STORE button to save it. "STORED" will flash briefly on the display.

Step 11 Turn the PARAMETER SELECT control one step clockwise to access the Lower Limit parameter (for PARA1).



Step 12 Use the PARAMETER ADJUST control to select the lowest value which the parameter is not to fall below through MIDI control changes.



Step 13 After selecting a value for the lower limit, press the STORE button to save it. "STORED" will flash briefly on the display.

Selecting a lower limit value that is greater than the upper limit value will invert the response of the controller - i.e. the toe position of the expression controller will provide the minimum value, while the heel position will provide the maximum value.

NOTE: Steps 1-13 are repeated seven times for a total of eight controllers. To exit Controller Assign at any time, turn either the PRESET or FUNCTION SELECT control. Only changes that have been stored will be saved after exiting the Controller Assign function.

Tap Delay

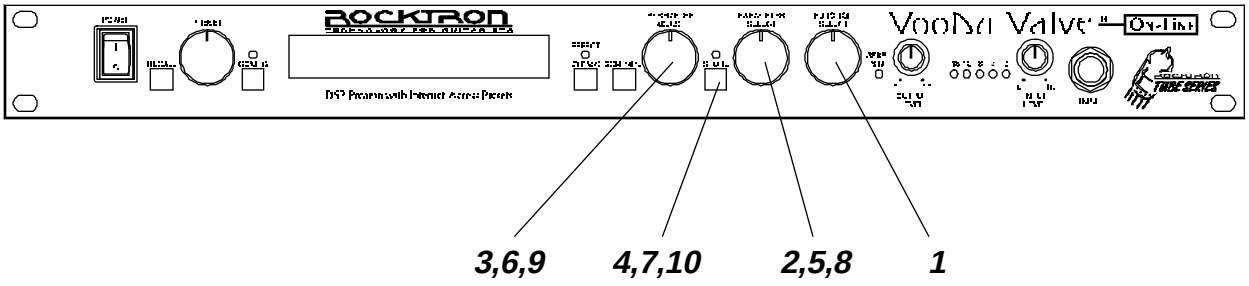
The Voodu Valve allows you to change the current delay time settings for the Delay 1 and Delay 2 parameters while you are playing by connecting a momentary footswitch to the rear panel FOOTSWITCH jack. When the Footswitch function is activated, tapping the footswitch will change the current delay time based on the amount of time that passes between taps. The Voodu Valve will detect the amount of time between any two taps that are less than one second apart *(i.e., if more than one second passes after the first tap, two more taps - less than one second apart - will be required to change the delay time again)*.

After the Voodu Valve detects the length of time between each tap, it then multiplies or divides that time based on the type of note stored in each of the DELAY 1 and DELAY 2 parameters of the Footswitch function. The resulting delay time can be:

- one-fourth of the time between taps (SIXTEEN)
- one-half of the time between taps (EIGHTH)
- two-thirds of the time between taps (TRIPLET)
- equal to the time between taps (QUARTER)
- two times the amount of time between taps (HALF), or
- four times the amount of time between taps (WHOLE)

The maximum delay time the Voodu Valve provides is 1000ms, therefore the Tap Delay feature will default to a lower parameter value when the time between taps requires a delay time over 1000ms. For example, if the WHOLE setting is stored for the Delay 1 parameter and the time between taps is 300ms, a delay time of 1200ms would be required (i.e. 300ms x 4). Because the maximum delay time is 1000ms, the Voodu Valve will default to the next lower multiplier (HALF) and provide a delay time two-times the delay time detected (600ms). If the delay time was over 1000ms again, the unit would then provide the QUARTER note equivalent.

NONE can also be selected for the Delay 1 and Delay 2 parameters so that they will not respond to taps on the footswitch.



Step 1 Turn the FUNCTION SELECT control to "FOOTSWITCH".

** FOOTSWITCH **

Step 2 Turn the PARAMETER SELECT control one step clockwise to display the current momentary footswitch "TYPE" (normally open or normally closed).

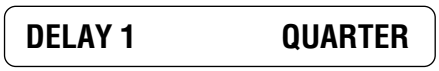
TYPE	NORM OPEN

The Footswitch TYPE parameter setting is global (i.e. the same for all presets).

Step 3 Turn the PARAMETER ADJUST control to select the footswitch type that you will be using (normally "OPEN" or "CLOSED").

Step 4 Press the STORE button to save the altered Footswitch Type setting. "STORED" will flash briefly on the display.

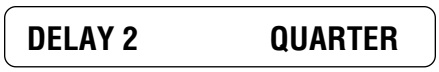
Step 5 Turn the PARAMETER SELECT control to one step further clockwise to access the current status for "DELAY 1".



Step 6 The PARAMETER ADJUST control can be used to change the current DELAY 1 status.

Step 7 Press the STORE button to save the altered Delay 1 setting. "STORED" will flash briefly on the display.

Step 8 Turn the PARAMETER SELECT control one step further clockwise to access the current status for "DELAY 2".



Step 9 Turn the PARAMETER ADJUST control to change the current DELAY 2 status.

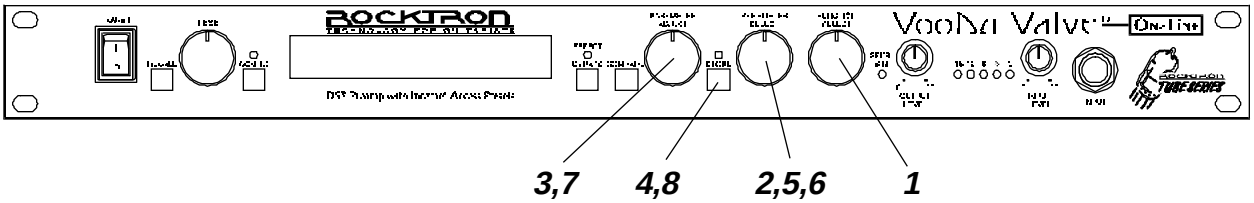
Step 10 Press the STORE button to save the altered Delay 2 setting. "STORED" will flash briefly on the display.

The DELAY 1 and DELAY 2 parameters can be stored differently for each preset.

Program Changes

Program Changes allow for different MIDI program numbers to be assigned to Voodu Valve preset numbers. For example, MIDI program #58 can be mapped to Voodu Valve preset #34. Then, when program #58 is selected from a MIDI transmitting device (such as a Rocktron All Access™ foot controller), preset #34 will be recalled on the Voodu Valve™.

The Program Changes Map table is shipped from Rocktron at a one-to-one correspondance (i.e. MIDI program #1 is mapped to Voodu Valve preset #1, 2 to 2, 3 to 3, etc.).



Step 1 To access MIDI Program Mapping, turn the FUNCTION SELECT control clockwise until the Voodu Valve™ displays "PROGRAM CHANGES".

PROGRAM CHANGES

Step 2 Turn the PARAMETER SELECT control one step clockwise to display the current Program Change On/Map/Off status.

PROG CHANGES	ON

Program Changes status options

ON - *Execute MIDI program changes as received by a MIDI controller*
MAP - *Use mapping table when a program change is received*
OFF - *Do not execute MIDI program changes*

Step 3 Turn the PARAMETER ADJUST control to select the desired Program Changes status setting.

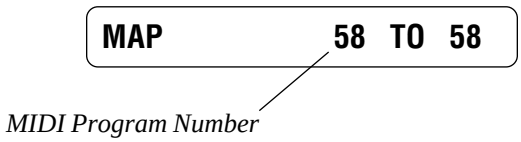
PROG CHANGES	MAP

Step 4 Press the STORE button to save the status selection. "STORED" will flash briefly on the display.

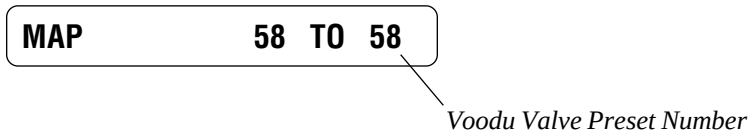
STORED

Step 5 Turn the PARAMETER SELECT control one step clockwise to display the current Program Changes mapping assignments.

Step 6 The number on the left of the display is the MIDI program number (or the number sent via a MIDI footswitch or other MIDI transmitter). Turn the PARAMETER SELECT control to select the MIDI program number to map to a preset.



Step 7 The number on the right of the display is the preset number to map to (or the preset number that will be recalled when the MIDI program number on the left is received). Turn the PARAMETER adjust CONTROL to select the preset number to map to.

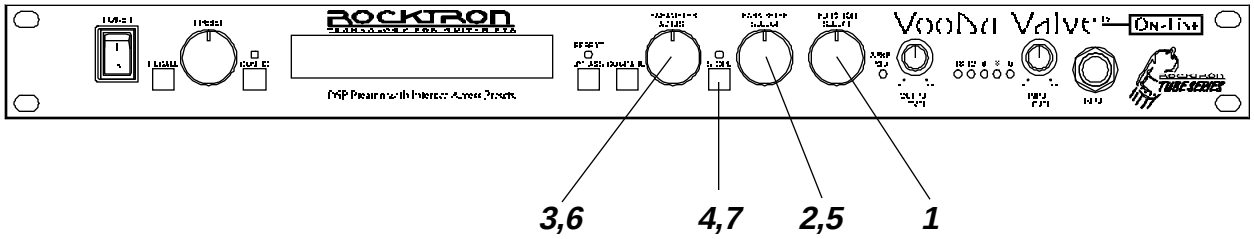


* *The preset number to map to can also be set to "OFF"—thereby not responding to that program change command.*

Step 8 After selecting both the MIDI program number and the preset number, press the STORE button to save the change for each altered mapping. "STORED" will flash briefly on the display.

MIDI Channels

The Voodu Valve can receive MIDI commands from other MIDI transmitting devices, as well as transmit MIDI program changes to other MIDI-based equipment when a preset is recalled on the Voodu Valve via the front panel RECALL button. The MIDI Channels function allows you to select the MIDI channels that the Voodu Valve will receive and transmit MIDI information on.



Step 1 Turn the FUNCTION SELECT control clockwise until the Voodu Valve displays "MIDI CHANNELS".

MIDI CHANNELS

Step 2 Turn the PARAMETER SELECT control one step clockwise to display the current MIDI Receive channel.

RECEV CHANL 1

Step 3 Turn the PARAMETER ADJUST control to select the desired MIDI channel. You may select channels 1-16, OMNI (all channels) or OFF (will not receive MIDI commands).

RECEV CHANL OMNI

Step 4 Press the STORE button to save the new MIDI Receive channel. "STORED" will flash briefly on the display.

STORED

Step 5 Turn the PARAMETER SELECT control one step further to access the MIDI Transmit Channel status.

TRANS CHANL OFF

Step 6 Turn the PARAMETER ADJUST control to select the channel that the Voodu Valve will transmit a MIDI program change on. You may select channels 1-16 or OFF (will not transmit a MIDI program change).

Step 6 Press the STORE button to save the new MIDI Transmit channel. "STORED" will flash briefly on the display.

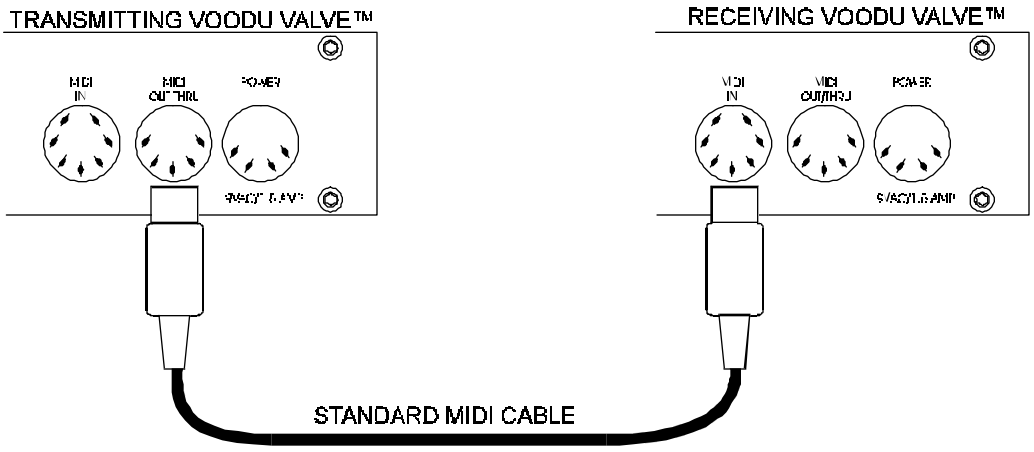
MIDI Dump/Load

Any or all of the Voodu Valve presets may be dumped to a sequencer or another Voodu Valve via system exclusive messages. The information exchanged when performing a MIDI Dump consists of parameter values, title characters and controller assignment/limit information. When dumping a single preset into another Voodu Valve, the dumped preset may be loaded into any preset location on the receiving Voodu Valve.

To dump a single Voodu Valve preset into another Voodu Valve:

Step 1 Connect a standard MIDI cable from the MIDI OUT of the transmitting Voodu Valve to the MIDI IN on the receiving Voodu Valve.

IMPORTANT: Do not allow a looping connection from the MIDI OUT/THRU of the receiving Voodu Valve back to the MIDI IN of the transmitting Voodu Valve.



Step 2 Turn the FUNCTION SELECT controls on both the transmitting and receiving Voodu Valves until "MIDI DUMP/LOAD" is displayed on each.

MIDI DUMP/LOAD	**MIDI DUMP/LOAD**
TRANSMITTING VOODU VALVE	*RECEIVING VOODU VALVE*

Step 3 Turn the PARAMETER SELECT control on each unit one step clockwise to "PR DUMP/ LOAD".

1 PR DUMP/LOAD	**1 PR DUMP/LOAD**
TRANSMITTING VOODU VALVE	*RECEIVING VOODU VALVE*

Step 4 Turn the PRESET control on the transmitting Voodu Valve to the preset that is to be dumped into the receiving Voodu Valve. As the PRESET control is turned, the preset number will be displayed in the first three characters of the display.

TRANSMITTING VOODU VALVE

Step 5 Use the PRESET control on the receiving Voodu Valve to select the preset location to store the received preset. The preset currently stored at the selected location will be lost when the new preset is received, therefore caution should be used when selecting a preset location.

RECEIVING VOODU VALVE

Step 6 To initiate the dump, press the STORE button on the transmitting Voodu Valve. The transmitting Voodu Valve will display the preset number being dumped and "DUMPED". The receiving Voodu Valve will display the preset location being stored to and "RECEIVING..." while it receives and stores the preset parameters and title.

TRANSMITTING VOODU VALVE

RECEIVING VOODU VALVE

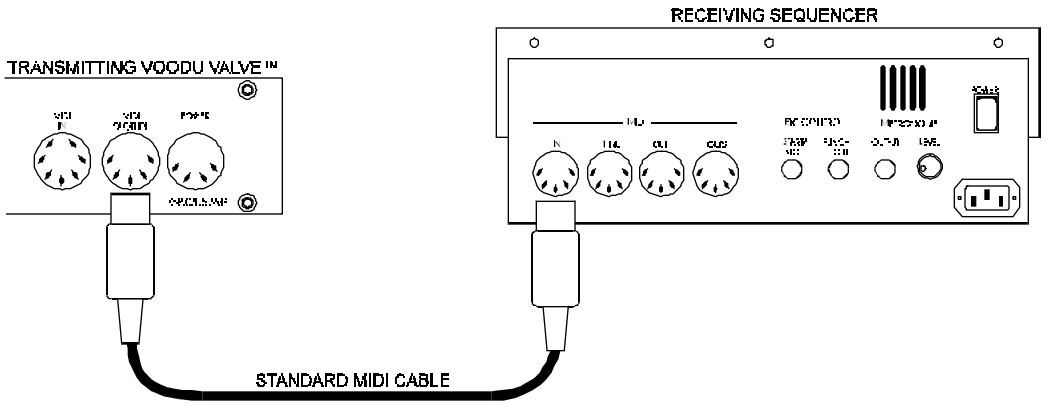
After all the information for the dumped preset is stored, the receiving Voodu Valve will display "LOADED". The receiving Voodu Valve also recalls the loaded preset at this time so that it may be verified.

RECEIVING VOODU VALVE

Note: *If there is an error in transmission, the unit will display "RECEIVE ERROR". Should this occur, check connections and try again. If other errors occur, check the Error Messages chart in the Appendix.*

To dump a single Voodu Valve preset into a sequencer:

Step 1 Connect a standard MIDI cable from the MIDI OUT of the transmitting Voodu Valve to the MIDI IN on the receiving sequencer.



Step 2 Turn the FUNCTION SELECT controls on the transmitting Voodu Valve until "MIDI DUMP/LOAD" is displayed.

MIDI DUMP/LOAD

TRANSMITTING VOODU VALVE

Step 3 Turn the PARAMETER SELECT control on the transmitting Voodu Valve until "BULK DUMP/LOAD" is displayed.

BULK DUMP/LOAD

TRANSMITTING VOODU VALVE

Step 4 Start the sequencer recording.

RECORD

Step 5 Press the STORE button on the Voodu Valve to initiate the data dump. As the Voodu Valve performs the dump, it will display "XXX DUMPED" - where "XXX" = the number of the data string currently transmitting (i.e. strings 1-254 are presets, titles, controller information and 2-tap delay information; string 255 contains program mapping information; and string 256 contains miscellaneous information. Contact Rocktron Corporation for information on how to receive a detailed MIDI spec).

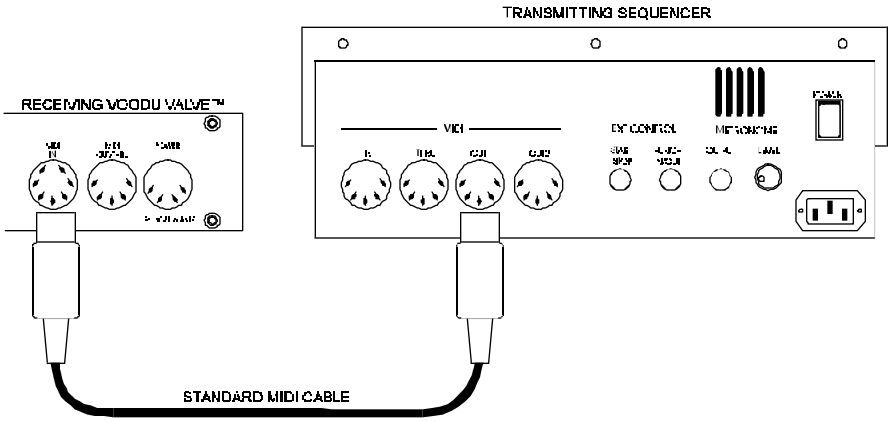
TRANSMITTING VOODU VALVE

Step 6 After the Voodu Valve displays "TRANS COMPLETE", stop the sequencer. The sequencer should have recorded all of the data that was dumped from the Voodu Valve. Keep this data stored on a disk in a safe place. Turn the PARAMETER SELECT control to continue.

To reload user data from a sequencer:

Step 1 Connect a standard MIDI cable from the MIDI OUT of the transmitting sequencer to the MIDI IN on the receiving Voodu Valve.

IMPORTANT: Do not allow a looping connection from the MIDI OUT/THRU of the receiving Voodu Valve back to the MIDI IN of the transmitting sequencer.



Step 2 Turn the FUNCTION SELECT controls on both the receiving Voodu Valve until "MIDI DUMP/LOAD" is displayed.

MIDI DUMP/LOAD

RECEIVING VOODU VALVE

Step 3 Turn the PARAMETER SELECT controls on the receiving Voodu Valve until "BULK DUMP/LOAD" is displayed.

MIDI DUMP/LOAD

RECEIVING VOODU VALVE

Step 4 Play back the data stored on the sequencer. The Voodu Valve will display the data strings as it is storing them. Each data string will appear with the word "LOADED". After all the user data has been loaded, the Voodu Valve will display "LOAD COMPLETE". Do not play back the data from the sequencer faster than it was loaded, as errors may occur (errors may also occur if any knob is turned or any button is pressed before the message "LOAD COMPLETE" appears).

LOAD COMPLETE

RECEIVING VOODU VALVE

If errors occur during transmission, the unit will display "RECEIVE ERROR" for transmission errors and "XMEM ERROR" for internal hardware errors. Errors occurring in transmission does not indicate that all of the received data is corrupted. Only the transmission string where the error occurred is corrupted.

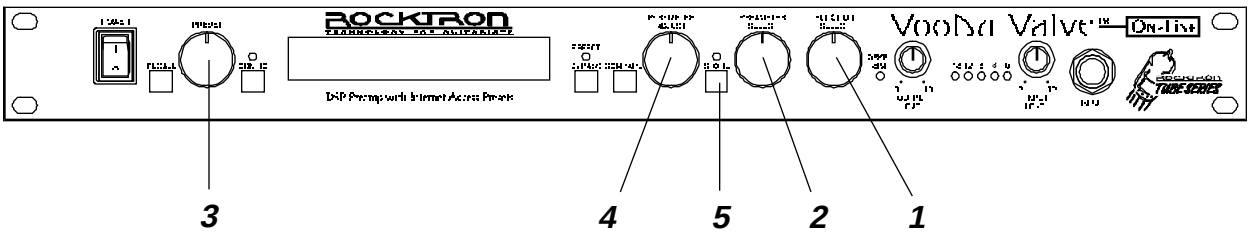
- **When receiving a Bulk Load, it is important that the data loaded to the Voodu Valve is not transmitted faster than it was originally dumped from the Voodu Valve. If information is sent too fast to the Voodu Valve, an error will occur.**

  When dumping information from a data storage device, such as an Alesis Data Disk, it is necessary to perform the dump in *sequence* mode rather than *sysx* mode. Sequence mode will dump the information back to the Voodu Valve at the same rate as it was received from the Voodu Valve. The Voodu Valve™ can receive a data dump at about 65Hz (or about 1 byte every 15 milliseconds).

Factory Restore

The Factory Restore function allows you to restore altered Voodu Valve presets to their original condition as shipped from the factory. Either the entire Voodu Valve memory can be restored, a single preset can be restored to any preset location, or the controller information alone can be restored.

Restoring a single factory preset:



Step 1 Turn the FUNCTION SELECT control clockwise to "FACTORY RESTORE".

FACTORY RESTORE

Step 2 Turn the PARAMETER SELECT control one step clockwise to "RESTR 1 TO 1". The number on the left is the original factory preset number to be restored. The number on the right is the preset location that the preset will be stored into.

RESTR 1 TO 1

Factory preset to be restored — *Preset location to store into*

Step 3 Turn the PRESET control to select the factory preset to be restored.

RESTR 98 TO 1

Step 4 Turn the PARAMETER ADJUST control to select the preset location to store the restored preset into.

RESTR 98 TO 22

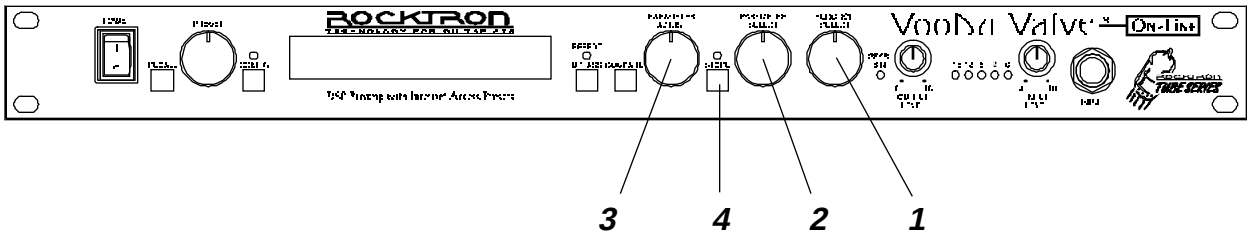
!! CAUTION !!
Pressing the STORE button at this time will overwrite the current preset with the displayed factory preset.

Step 5 Press the STORE button to begin restoring the selected preset into the selected location. After the process is completed, the display should read "ERRORS 0". This represents the number of bytes that the Voodu Valve found did not initialize properly. Any number of errors other than "0" means that the Voodu Valve may not have initialized properly and the process should be repeated.

The Voodu Valve will remain in this condition until the FUNCTION SELECT control is turned to exit the Factory Restore function. The preset currently recalled will be the preset most recently restored into the current location.

Restoring a single factory preset:

!! CAUTION !!
This procedure will permanently erase all user presets (1-254) and replace them with the original factory presets. If you have altered and stored presets which you do not want to erase, do not perform the following procedure.



Step 1 Turn the FUNCTION SELECT control clockwise to "FACTORY RESTORE".

FACTORY RESTORE

Step 2 Turn the PARAMETER SELECT control two steps clockwise to "ALL RESTORE 0".

ALL RESTORE	0

Step 3 A specific code number must be entered to restore the Voodu Valve memory. Use the PARAMETER ADJUST control to enter the number "220".

ALL RESTORE	220

!! WARNING !!
Pressing the STORE button at this time will permanently erase all user presets and replace them with the original factory presets. If you have altered and stored presets which you do not want to erase, turn the FUNCTION SELECT control to exit this function.

Step 4 Press the STORE button at this time to initiate the All Restore procedure and erase all current Voodu Valve presets, replacing them with the original factory presets. The Voodu Valve will display "INITIALIZING" as the Voodu Valve memory is restored.

INITIALIZING

After the All Restore process is completed, the display should read "ERRORS 0". This is the number of bytes that the Voodu Valve found that did not initialize properly. Any number of errors other than "0" means that the Voodu Valve may not have initialized properly and the process should be repeated.

ERRORS 0

The Voodu Valve will remain in this condition until the FUNCTION SELECT control is turned to exit the Factory Restore function. The preset currently recalled will be the preset most recently restored into the current location.

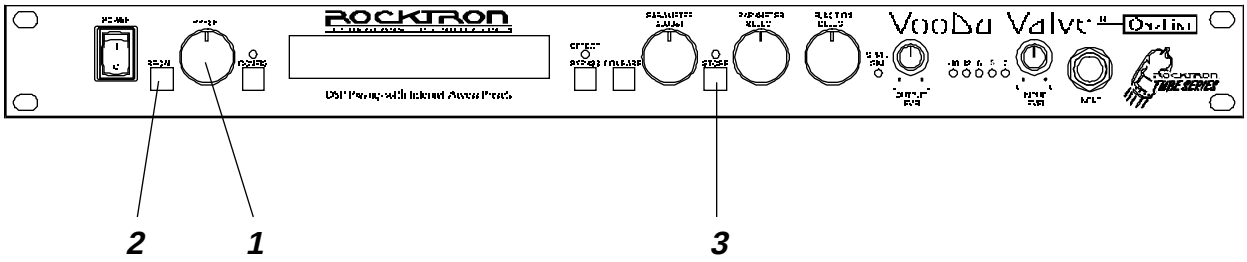
Restoring the Voodu Valve controller assignments:

The controller assignments for the Voodu Valve can also be reinitialized without affecting presets and other stored information. Reinitialization of the controller assignments is necessary when setting up the Voodu Valve to operate in remote mode with a Rocktron All Access™ footswitch.

To reinitialize only the controller assignments, enter a code number of "221" at Step 3 on the opposite page.

Selecting a Power On Preset

The Voodu Valve allows you to store a Power On preset which will always be recalled when the unit is turned on.



Step 1 Turn the PRESET control to the preset number you wish to be recalled each time the unit is turned on.

PRESS RECALL FOR	⟷	34 PRESET TITLE

Step 2 Recall the selected preset by pressing the RECALL button.

34 PRESET TITLE

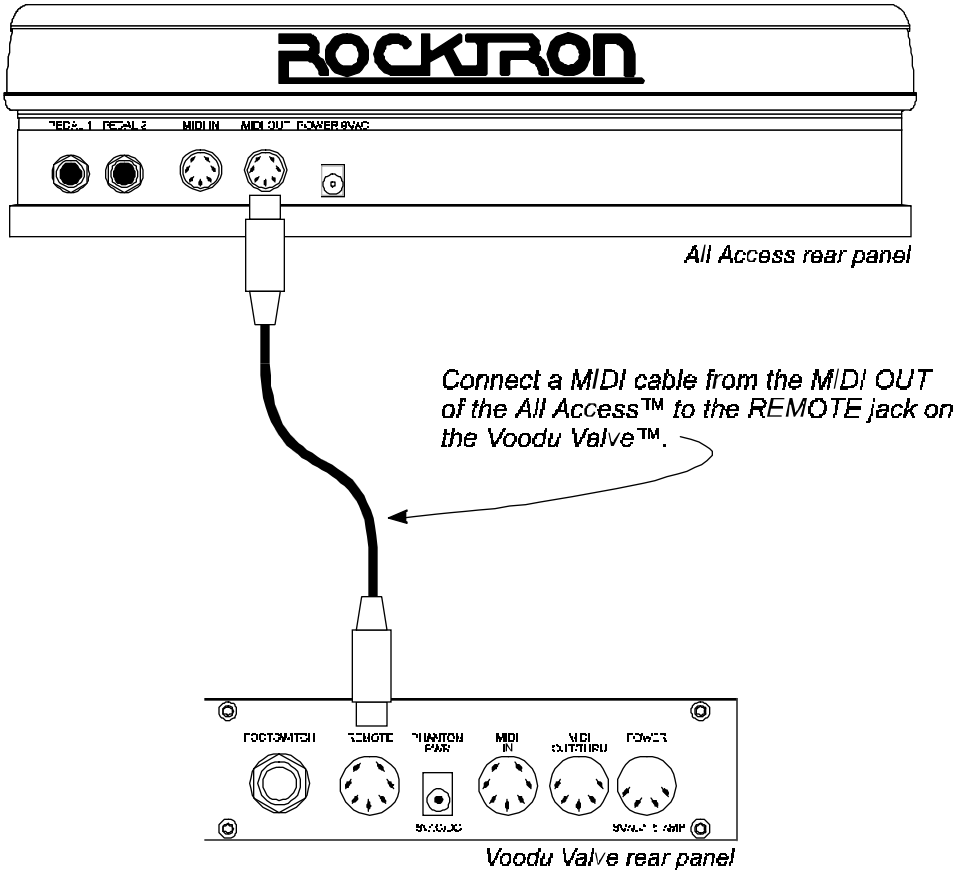
Step 3 Press the STORE button while viewing the preset number and title to save it as the Power On preset.

PWR ON PR STORED

Using the Voodu Valve with a Rocktron All Access™ in REMOTE mode

A Rocktron All Access™ MIDI footswitch can act as a dedicated remote control for the Voodu Valve—allowing direct access to specific Voodu Valve features and parameters from the footswitch at any time.

Step 1 To use an All Access™ footswitch as a dedicated remote, connect the MIDI OUT of the All Access to the REMOTE jack of the Voodu Valve using a 7-pin MIDI cable, as shown below.



To set up the Voodu Valve for remote operation, do the following:

Step 2 Reinitialize the controller assignments as shown earlier in this section under the heading "Restoring the Voodu Valve Controller Assignments". This will match up the Voodu Valve's controller assignments to the All Access. A code of "221" must be entered to initialize only the controller information.

ALL RESTORE	**221**

Step 3 Turn the FUNCTION SELECT control clockwise to "REMOTE CONTROL".

REMOTE CONTROL

Step 4 Turn the PARAMETER SELECT control one step clockwise to display "REMOTE".

REMOTE OFF

Step 5 Turn the PARAMETER ADJUST control to select "ON".

REMOTE ON

Step 6 If the Voodu Valve titles are to be displayed on the All Access, turn the PARAMETER SELECT control to "TITLE XFER".

TITLE XFER OFF

Step 7 Turn the PARAMETER ADJUST control to "ON" to enable title transfers from the Voodu Valve to the All Access display.

TITLE XFER ON

To set up the All Access for remote operation, perform these steps from the All Access SETUP program:

(See the All Access user's manual for detailed information on editing the All Access)

Step 8 Set the Operating Mode to *"REMOTE"*.

Step 9 Set the Bank Size to *"10"*.

Step 10 Reinitialize only the controller information for the instant access switches and pedals using a code of "231".

Step 11 If the preset titles from the Voodu Valve are to be displayed on the All Access automatically, set the Remote Title Number to match the Unit ID Number parameter on the Voodu Valve.

When operating in Remote mode with a Voodu Valve, switches 1-10 act as normal preset switches, while switches 11-15 each perform a special function.

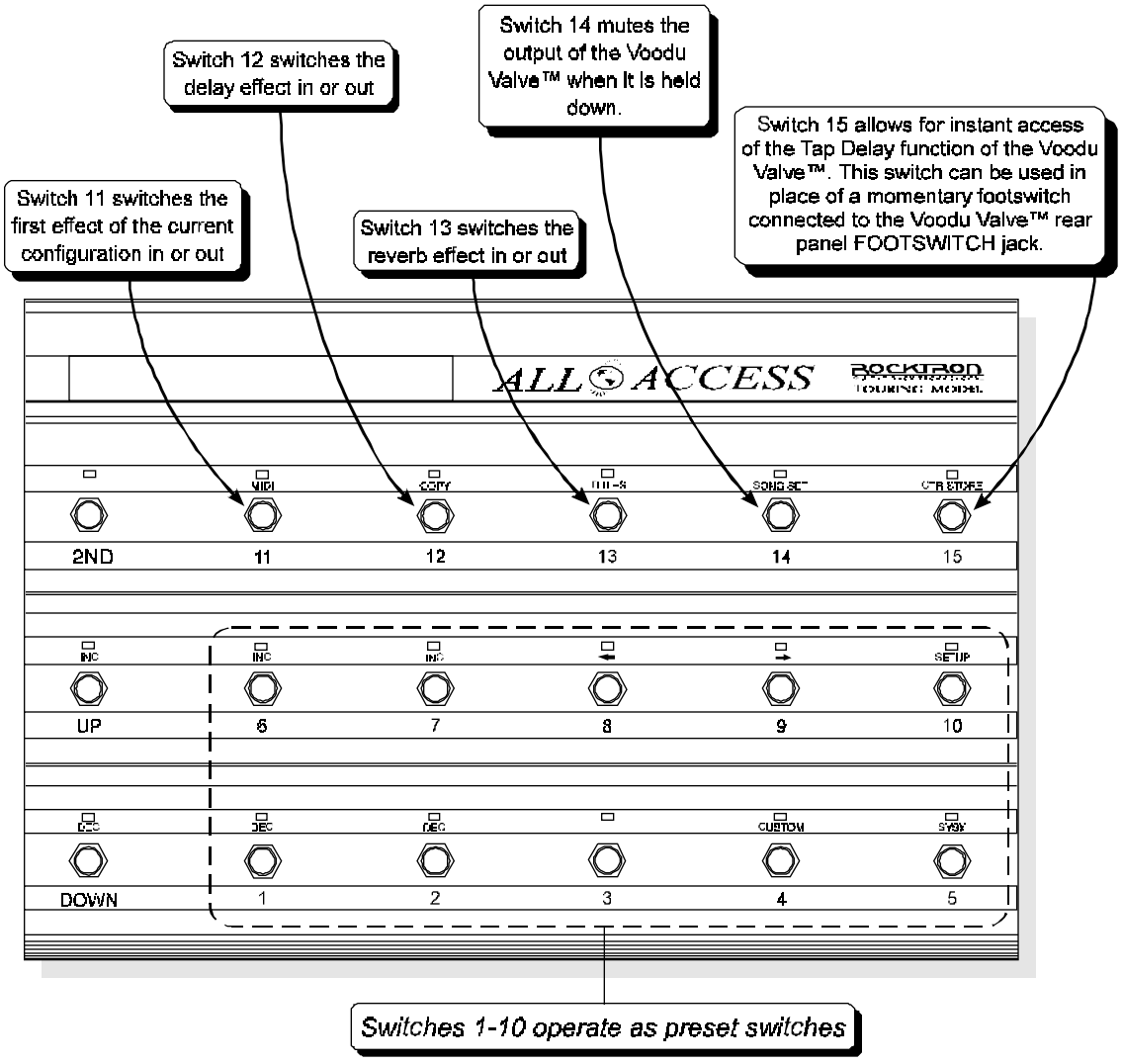
Switch 11 *switches in or out the first effect of the current configuration (not including HUSH®). This can be either chorus, flange, tremolo, pitch shift, wah or phase shift.*

Switch 12 *switches in or out the delay effect.*

Switch 13 *switches in or out the reverb effect.*

Switch 14 *can be pressed and held to mute the output of the Voodu Valve for as long as the switch is held down. This is especially useful when switching guitars during a live set.*

Switch 15 *provides instant access to the Tap Delay feature of the Voodu Valve. Switch 15 can be used instead of connecting a momentary footswitch to the FOOTSWITCH jack on the rear of the Voodu Valve.* *For more information on the Tap Delay feature, turn to page 81.*



Upon proper setup and connection of the units, the All Access will provide the functions shown above.

9. Appendix

ERROR MESSAGES

Message	Possible Reason	Corrective Action
MEMORY ERROR	CODE BYTE IS NOT CORRECT IN EEPROM MEMORY.	*MAKE SURE EEPROM IS TIGHT IN SOCKET.* *MAKE SURE WITHIN CORRECT OPERATING TEMPERATURE.*
DUMP ERROR	MIDI INFORMATION IS BEING RECEIVED AT THE MIDI IN AT THE SAME INFORMATION IS BEING DUMPED.	*DISCONNECT MIDI CORD AT MIDI IN OF TRANSMITTING VOODU VALVE.*
RECEIVE ERROR	MIDI SYSTEM EXCLUSIVE INFORMATION WAS NOT RECEIVED CORRECTLY.	*BULK LOAD WAS TRANSMITTED TOO FAST.* *CHECK SUM BYTE WAS NOT CORRECT.* *DATA STRINGS NOT CORRECT LENGTH.* *DATA STRINGS OUT OF ORDER.*
XMEM ERROR	EEPROM MEMORY IS NOT BEING STORED TO CORRECTLY.	*MAKE SURE EEPROM IS TIGHT IN THE SOCKET.* *MAKE SURE WITHIN THE CORRECT OPERATING TEMPERATURE.*
LOAD ERRORS	MIDI SYSTEM EXCLUSIVE INFORMATION WAS NOT RECEIVED CORRECTLY OR STORED CORRECTLY.	*CHECK RECEIVE ERROR AND XMEM ERROR.*

MIDI IMPLEMENTATION

Voodu Valve Online

Date: June 30, 1997 Version: 1.0

	FUNCTION	TRANSMITTED	RECOGNIZED	REMARKS
BASIC CHANNEL	DEFAULT	1-16	1-16	May be saved in non-volatile memory
	CHANGED	1-16	1-16	
MODE	DEFAULT	X	X	
	MESSAGES	X	X	
	ALTERED	X	X	
NOTE NUMBER	TRUE VOICE	X	X	
VELOCITY	NOTE ON	X	X	
	NOTE OFF	X	X	
AFTER TOUCH	KEY'S	X	X	
	CHANNEL	X	X	
PITCH BEND		X	X	
CONTROL CHANGE**		X	O	
PROGRAM CHANGE*	TRUE NUMBER	O	O	
SYSTEM EXCLUSIVE		O	O	For Bulk Dump/Load and Preset Dump/ Load
SYSTEM COMMON	SONG POSITION	X	X	
	SONG SELECT	X	X	
	TRUE REQUEST	X	X	
SYSTEM REAL TIME	CLOCK	X	X	
	COMMANDS	X	X	
AUXILIARY MESSAGES	LOCAL ON/OFF	X	X	
	ALL NOTES OFF	X	X	
	ACTIVE SENSING	X	X	
	SYSTEM RESET	X	X	

O=YES
X=NO

* Actual MIDI program value sent is 0-253, corresponding to presets 1-254. Optional implementation of program mapping also available.

** The control number may be from 0-120, or OFF. An upper and lower range may also

TECHNICAL DATA

INPUT IMPEDANCE	***470KΩ***
MAXIMUM INPUT LEVEL	***+20dBu***
INPUT JACK	***1/4" mono***
OUTPUT IMPEDANCE	***less than 150Ω***
MAXIMUM OUTPUT LEVEL	***+20dBu***
OUTPUT JACKS	***1/4" unbalanced Left and Right. Left jack can drive stereo headphones of 600Ω or more (AKG studio phones, for example).***
	XLR balanced Left and Right.
TUBE REPLACEMENT	***12AX7***
MIDI IN	***7-pin DIN***
MIDI THRU/OUT	***5-pin DIN***
POWER REQUIREMENTS	***9VAC/3.4A***
DIMENSIONS	***19" x 7" x 1 3/4"***